

THE IRON AGE

New York, June 20, 1918

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DETROIT TWIST DRILLS

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Production Achievements
of a Great Drill

DETROIT TWIST DRILL COMPANY - DETROIT, MICH.

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NATION WIDE STEEL-SERVICE

CHICAGO NEW YORK ST. LOUIS DETROIT



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INDUSTRIES PECULIAR TO THE CENTRAL
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SHEETS, TUBES, PIPE, PIPE FITTINGS, ETC.

JOSEPH T. RYERSON & SON

IRON STEEL MACHINERY

THE IRON AGE

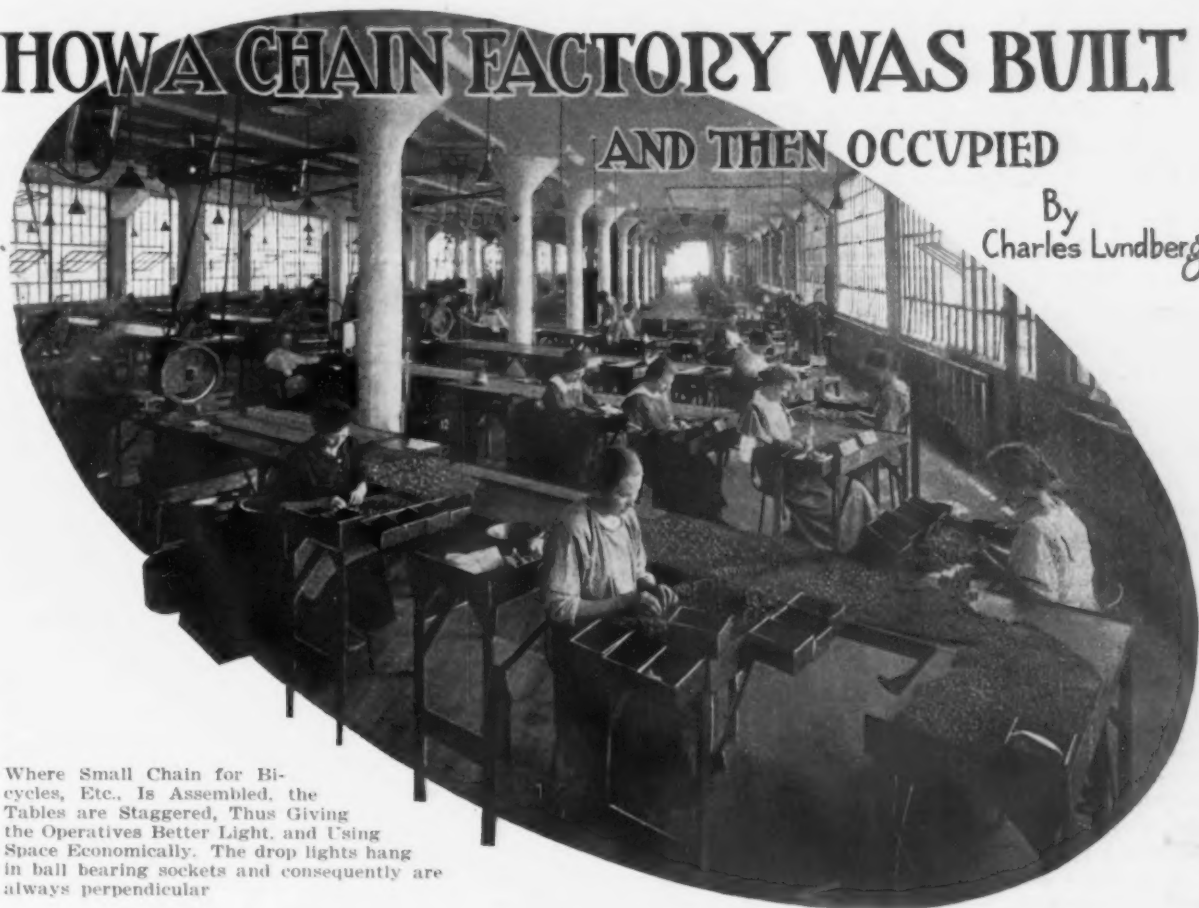
New York, June 20, 1918

ESTABLISHED 1855

VOL. 101: No 25

HOW A CHAIN FACTORY WAS BUILT AND THEN OCCUPIED

By
Charles Lundberg



Where Small Chain for Bicycles, Etc., Is Assembled, the Tables are Staggered, Thus Giving the Operatives Better Light, and Using Space Economically. The drop lights hang in ball bearing sockets and consequently are always perpendicular

IN THE construction of the new plant of the Diamond Chain & Mfg. Co., Indianapolis, is afforded an example of building a factory around a business with a fidelity to detail that is seldom equaled. It is safe to assert that no home builder ever gave more thought and study to his contemplated domicile than did the department heads of the company, and the manner in which they achieved their object and the plan they adopted for moving a busy organization with its great equipment from five separate plants to the new and central one may be helpfully suggestive. The company has about 1000 employees and between 600 and 700 machines. The new factory stands on a site of six acres at West Street and Kentucky Avenue.

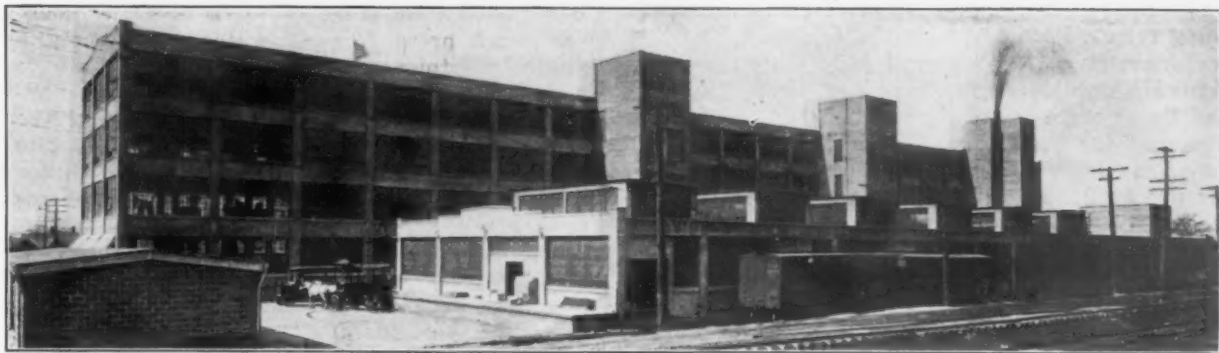
Diamond chains are made for automobiles, bicycles, motor trucks, tractors and general power transmission. It follows that the parts of all the product are more or less similar, yet about 200 different models go through the plant, a fact that was necessarily kept in mind during the determination of a building lay-out and system of routing which would follow straight lines to the utmost degree.

It was foreseen years ago that progress and consequent growth would eventually demand larger and better housing for both machines and employees. The study referred to was begun

within the organization itself. Methods of routing, perfecting operations to effect a saving of a second, or fraction thereof, here and there, the avoidance of waste motion, and the well-being of employees were thought out, and efficiency and scientific management as they existed elsewhere were carefully studied. Several plans were drawn to illustrate suggested lay-outs, production systems and routing. The better to visualize the buildings as it was finally determined to build them, small models were made. The final decision was to build two parallel buildings of reinforced concrete, one of four stories and the other one story, as illustrated herewith. The qualifications which the buildings should possess were broadly as follows:

- Must satisfy a logical production sequence.
- Must be capable of extension of any part or all the factory.
- Must be of standard design so that building can be converted to other manufacturing.
- Must be of economical construction.
- Must use ground economically.
- Must be well designed for daylight lighting.
- Must be of good appearance.
- Must be as compact as possible.
- Must have the minimum number of harmful or disagreeable conditions (such as furnace room heat exhausting into an adjoining department).

The main building is 60 x 460 ft., and the one-story structure is 80 x 300 ft. They are sepa-



Rear View of the Diamond Chain Plant. In the one-story building are the heat treating, washing, rattling and polishing departments, this arrangement eliminating possibility of dust, gases or heat invading the main manufacturing building. The three bays shown contain elevators, stairs and lavatories.

are then raised by a hoist on a monorail and carried over containers into which the parts are dropped by releasing the dump bottoms of the baskets. The oil in the quenching tanks is cooled by passing it through coils in a water tank.

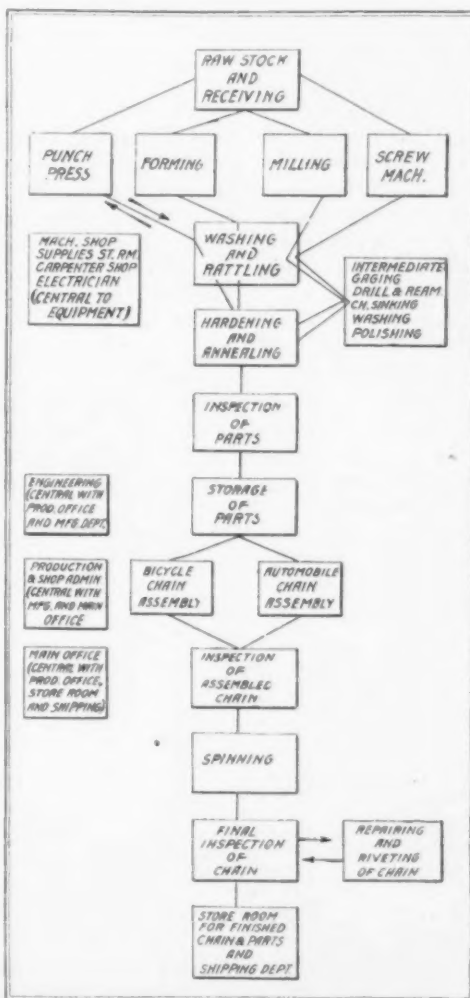
The one-story building, unlike the main structure, is of beam and girder construction, every alternate bay having a monitor for light and ventilation. In addition to the departments named, this building will also contain facilities for inspecting raw material before it is accepted.

In laying out the various departments, the following, among numerous other things, were kept in mind: The maintenance, including the carpenter and machine shops, electrician and storeroom for supplies, was placed on the second floor where all would be most central to the producing equipment. The engineering department was placed at one end of the building on the second floor so that it would be central with the manufacturing department and also with the main executive offices, inasmuch as it has frequent calls to consult with the latter. The production and shop administration offices were placed where they would be central with the

manufacturing department and the main office. The shipping department, the last in line of progression, was located in proximity to the sales and order departments. Still another feature kept in mind was to create a design which would allow the enlargement of every department without entailing any general rearrangement of the routing.

Twelve Risers Distribute Power

In the distribution of electric power to the four floors, it was found expedient to use twelve risers, six on each side of the building, the wires being carried in steel conduits. The outlet boxes are regularly spaced at the sides, not opposite each other but staggered. Each riser can carry 100 hp., and all or any part of it can be taken off at any floor. The arrangement permits of great flexibility in the distribution of power, and obviates the necessity of long exposed conduits or wires. One reason for having twelve risers was that the flat slab ceilings do not lend themselves to carrying embedded conduits. All motors are suspended from the ceilings, there being fifty 7½-hp. and fifty 5-hp. 220-volt alternating-current motors throughout the plant. Diamond roller chain is used on all motor-to-line shaft drives instead of belts, and



Order of Progression from Raw Material to Finished Chain. In all twenty-one main departments are indicated. The arrangement of departments is as follows:

One-story building: Receiving and inspection departments; employees' co-operative store; raw stock department; hardening department; rattling department.

Four-story building: First floor—General office, shipping room, punch press department and part stores. Second floor—Factory offices, experimental department, supply store, carpenter shop, sprockets, electricians, belts, forming, machine shop and tool room, milling, drilling, gaging, reaming, countersinking. Third floor—Mutual service section, automatic screw machine department. Fourth floor—Bicycle inspection, automobile inspection, spinning, bicycle chain assembling, auto chain assembling.



Stockroom in One-Story Building



Part of the New Offices

illustration of it is shown herewith (the chain case being removed).

In arriving at a determination in regard to artificial lighting, many kinds of lamps, shades and lights were tested, by photometer and otherwise, and the decision was to use 100-watt Mazda lamps in the shops, the glare being eliminated by the use of deep bowl shades. In the offices and the drafting room indirect lighting is used. The drops which carry the Mazda lamps are supported by ball sockets, and therefore always assume an absolutely perpendicular position, a little thing, perhaps, but one which gives a pleasing effect when the length of a shop is viewed. All the 20 x 20-ft. bays throughout the plant are lighted by four drops, and as a result of care in placing machinery, they are interfered with in only a few instances by shafting or pulleys. The wiring of the building was so calculated that two to three times the horsepower now required for power can be carried and twice the current necessary for lighting.

The Diamond Chain & Mfg. Co. employs many women and girls and has given close attention to their efficiency as well as to their comfort and well-being. At the assembly tables, where the parts of large chains are placed together, the women are so placed that they do not face each other, this eliminating a tendency to unnecessary conversation. Each operative has to her right and left the parts to be brought together, and a man at the proper time pulls the chain along to the rivet spinning machine, where the parts are permanently fastened together. Should an assembler find a defective part, it being a part of her duty to scan each piece she picks up, she drops it in one of two or three tubes or chutes directly in front of her, whence it is deposited in a container conveniently placed under the opposite side of the table. The tables at which small chain is assembled are staggered with relation to the windows, giving the operators better light, while the long tables do not project too far toward the center of the room. Wherever possible rivet-spinning machines are used instead of ordi-

nary riveters, much noise being thereby eliminated.

Convenient Handling a Large Factor

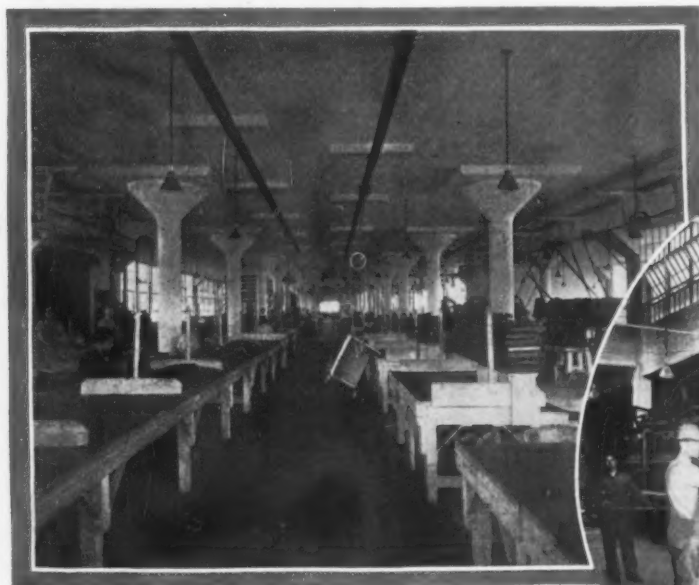
Throughout the shops, effort is everywhere apparent of the intention in the handling of the small parts which enter the company's product to maintain a convenient level at which the pieces are handled. Metal cans or containers, for instance, are 18 x 18 in. square and 32 in. in height, the latter dimension being the height of the work tables. On one edge of the top of the cans are two prongs which project over the top of a table, and when in this position the cans are lifted from the bottom by means of a chain hoist on a monorail, one man thus being able to dump the contents of a can (about 1000 lb.) on a table with very little effort.

To make the die blocks of the punch presses of the same height from the floor as the metal boxes, the presses are mounted on wooden platforms, correspondingly high chairs or stools being provided for the operators. As they are finished, pieces are simply brushed aside and fall into the container.

To stimulate foremen in keeping their departments in spic and span order, with all unused tools in their proper places, aisles clear, containers at their prescribed stations, etc., they are paid a bonus for excellence in this respect, and once every two weeks, executives accompanied by the foreman make an inspection and for whatever is found out of place or untidy, in violation of the rules, a deduction from the bonus is made.

To carry material from one department to another, trucks of the lift type, drawn by electric tractors, traverse the aisles of the shops at high speed. The aisle space which must be kept unencumbered is indicated by lines painted on the floor. Throughout both buildings, the floors are of oil-dipped maple, laid on creosoted sleepers, all resting on concrete. Light, power and steam are obtained from the public service company, which is a neighbor.

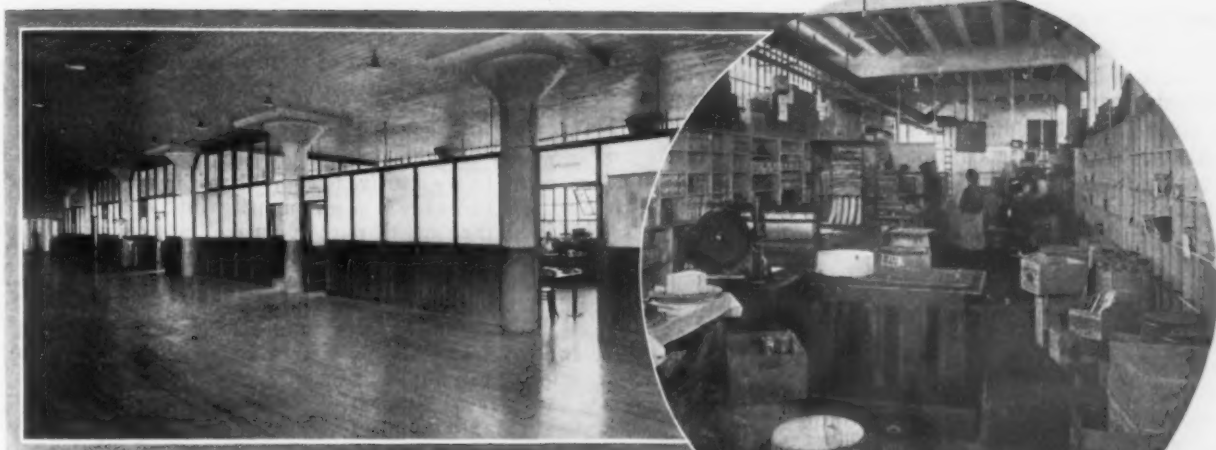
In the buildings are 17 toilet and washrooms and eight locker rooms, all finished in white. Spe-



Where Assembling Is Done, Girl Workers are Seated in a Manner that Discourages Unnecessary Conversation. In the aisle is shown a can in which parts are handled. To be noted is the arrangement of hoist and monorail which enables one man to empty can on table

The Arrangement of Tanks and Monorail Hoist Allows Several Tanks being Placed Within Small Compass. The case-hardening boxes are drawn from furnace to conveyor, thence to sifting grid at end of conveyor. This department is in building separate from main factory





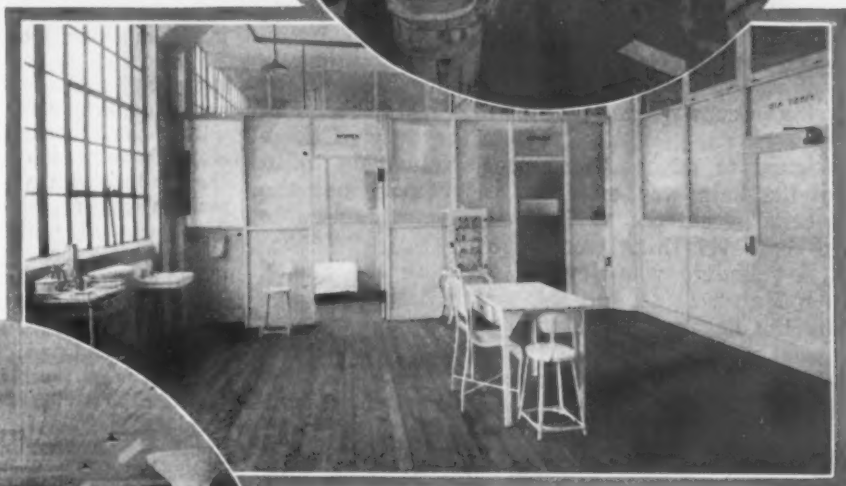
The Welfare Department Offices accommodate the director of mutual service, editor of factory paper, physician, library, etc.

Adjoining the welfare offices is a cafeteria, not yet entirely complete.

At opposite ends of the first aid room are similar accommodations for men and a physician's office for examination purposes.

One meeting of employees, for example, was addressed by British and American officers who had seen actual service "Over There."

In the compartments to the right of the view of company grocery store are placed baskets containing purchases until the employee is ready to start for home.



MUTUAL SERVICE SECTION ON PART OF THIRD FLOOR



cial attention was given to the proper location of the toilets, some of these being placed on a small mezzanine floor in the rear towers adjoining the stairs, space which otherwise would be wasted. In the hardening department a special wash room contains shower baths. The washing facilities elsewhere are of the long trough type, of white enamel, the water being dispensed by sprinklers instead of from ordinary faucets, this not only economizing the use of water, but making what is used thoroughly effective. Incidentally, one or all sprays may be turned on, a single man wanting to wash his hands finding it unnecessary to waste water. He simply turns a by-pass valve and gets enough for his needs. Drinking water comes from a well 400 ft. deep, drilled by the company, the water being distributed throughout the plant at fountains. As in most factories the expectorating habit creates something of a problem. The first cost of cuspidors is not great, but the cost of car-

ing for them is considerable. The company has therefore decided to use paper receptacles, these being destroyed after use.

To the welfare department 8000 sq. ft. on the third floor has been assigned. It contains a cafeteria, restroom, library, physician's office, where examinations may be made with privacy, a room for first aid treatment, a nurse being in charge; a bed for women and another for men in separate rooms, a room for the director of mutual service and another for the editor of the factory paper entitled "Scraps." The company conducts a complete grocery store, a view of which is shown herewith. An employee, on coming to work, leaves his order and before he leaves for home the order is filled and his purchases are placed in a basket. The basket is placed in one of the several compartments shown to the right of the picture, where it can be located without delay. The employee takes it home when he goes. The company, it may be

added, was the first in Indianapolis to go "over the top" 100 per cent strong in the "war chest drive" beginning May 20. The amount of money subscribed was \$26,232.23 with 50 employees absent.

Great attention has been given to accident prevention. Elevators cannot be moved until the gates are closed, moving parts are protected, and all piping is painted distinctive colors in accordance with a standard code.

Created Department for Removal

The company is not yet entirely housed in the new plant, although everything is in readiness. Moving a plant of magnitude, meanwhile not interfering with production, required no little study. It could not be done all at once without a protracted shut-down, and the utmost care was necessary to avoid confusion and the temporary breaking down of a department in a way that would hold up manufacture. Therefore a special department was organized, composed of members of the various departments, a chief appointed, etc., and the work functionalized. It is the duty of those assigned to devote themselves exclusively to it. Outside help was employed, of course, but the "details" from the various departments were to see that everything went right.

A schedule was devised covering the period from March 11 to July 24, which designated not only the day and hour each department or part thereof was to move, but the number of loads required, and the time which should be consumed. Departments which could not be disturbed, even for a short time on a week day, were transferred Saturday night or Sunday. So far the system has proved satisfactory. The following illustrates the manner in which the removal of the departments was scheduled, the sheet reproduced herewith showing how the removal of the machine shop, tool crib, toolroom, carpenter shop, etc., was managed. Altogether there were twenty-seven loads and as three truck and trailer loads were moved daily it required nine days for the transfer. Three days additional were required to set machinery and counter shapes, according to estimate.

Association of Iron and Steel Electrical Engineers

The twelfth annual convention of the Association of Iron and Steel Electrical Engineers will be held in the Southern Hotel, Baltimore, Sept. 9-14 next. A tentative program of papers has been prepared for the meeting as follows, in addition to those which will be presented by the standardization, electrical development and safety committees:

- "Methods of Education for Electrical Employees of Iron and Steel Mills," by the Educational Committee.
- "Remote Controlled Sub-Station," by W. T. Snyder, National Tube Co., McKeesport, Pa.
- "Automatic Engine Stops," by Walter Greenwood, safety engineer, Carnegie Steel Co., Youngstown.
- "Standardization of the Rating of Large Steel Mill Motors," by K. A. Pauly, General Electric Co., Schenectady, N. Y.
- "Practical Method of Selecting Carbon Brushes," by Alfred Mulhaupt, Jr., Corliss Carbon Co., Bradford, Pa.
- "Bridge Motors for Cranes," by R. H. McLain, General Electric Co., Schenectady, N. Y.
- "Condensers and Condensing Engineering Practice," by D. D. Pendleton, Wheeler Condenser & Engineering Co., Pittsburgh.
- "Roller Bearings for Cranes," by P. B. Liebermann, East Orange, N. J.
- "Installation and Operation of Auxillary Drives," by J. D. Wright, General Electric Co., Schenectady, N. Y.
- "High-Tension Installations under Severe Conditions," by Jas. Farrington, La Belle Iron Works, Steubenville, Ohio.
- "Electrically Driven Mills, Showing Tonnages, Costs, etc.," by J. T. Sturtevant.
- "60-Cycle versus 25-Cycle for Steel Mills," by J. E. Fries, Crocker-Wheeler Co., Ampere, N. J.

Exacting Inspectors of War Material

The following account of some of the difficulties manufacturers are having with Government inspection is given by the *New York Commercial*:

Federal inspectors rejected several hundred pounds of common bolts for airplanes because they weighed 6 oz. more to the hundredweight than the specifications called for, and also a large quantity that did not come within the thousandth part of an inch of the set measurement, none of which varied from it by the hundredth part of an inch. It is possible to make such parts with greater exactness than this bolt factory did, but it would more than double the cost and also consume the time of two or three times as many men who would have to be employed in finishing them by hand. Manufacturers are exasperated by such rejections when the departure from set standards are of no importance.

To speed up production of airplanes and other war materials, American manufacturers must use automatic machine tools. If an automatic machine for working steel is set to the thousandth part of an inch the wear on the cutting tool will soon cause a microscopic departure from that standard. To be accurate within the thousandth part of an inch the machinist would have to stop the machine after every cut, caliper the product with a micrometer and adjust the tool and make a test cut, which would also have to be calipered. A manufacturer might as well scrap his automatic machines as use them in that way. An old-fashioned lathe would do more work under such conditions.

Take the lot of bolts that weighed 6 oz. more than the specified hundredweight. That represents a departure of about one-third of one per cent, or one three-hundredths, from the standard. Before those bolts passed through the various hands and became part of a finished airplane they would lose that 6 oz. and more by attrition.

Such inspection is ridiculous. In the case of the nuts, they would lose more than the thousandth part of an inch in being screwed on with a wrench, and what wrench would find the difference of a thousandth or a hundredth part of an inch, which is less than the human eye can perceive without the aid of a micrometer or a vernier gage? There are not enough skilled machinists in the United States to finish parts for 40,000 airplanes to such fine measurements in five years.

Tests of Gray-Iron Castings Made from Steel Scrap in Electric Furnace

A description of the process of making pig iron and iron castings direct from scrap steel in an electric furnace was published in *THE IRON AGE*, Aug. 30, 1917. It was stated in the article that castings made and used by the company producing electric cast iron from scrap gave better satisfaction than the same kind purchased in the open market. Tests have been made at Columbia University on bars cast from pig iron made by this process. The results are as follows:

Bar	No. 1	No. 2
Tensile strength, lb. per sq. in.	45,030	40,730
Modulus of rupture, lb. per sq. in.	71,440	71,500
Fracture	Fine granular	Fine granular
	Per Cent	Per Cent
Total carbon	3.26	3.40
Graphitic carbon	2.54	2.67
Combined carbon	0.72	0.73
Silicon	1.50	1.91
Manganese	0.41	0.42
Phosphorus	0.020	0.022
Sulphur	0.012	0.010

The tensile tests were made on rough square bars instead of machine turned round bars, as is customary. It is claimed that considerably higher results would have been obtained on machine turned bars.

It is reported that the Yankee Steel Co. of America will build a plant near Sharpsville, Pa., under the direction of Ephraim Truxall, 1014 Union Bank Building, Pittsburgh, who is president of the company.

Bethlehem to Build New Shipyard

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., will build a new shipyard at Alameda, Cal., on San Francisco Bay, to be known as the Liberty plant. The new yard will have 10 shipways and complete shops for fabricating steel and making engines, boilers and other ship equipment. Machinery will be purchased soon. A similar shipyard may be built somewhere on the Atlantic Coast, though the matter is being held in abeyance for the present because no arrangements have been concluded for housing facilities for workmen and their families.

The Emergency Fleet Corporation will furnish the capital necessary for the expansion at Alameda. The yard will build troop ships of 25,000 tons displacement for the War Department. The New York Shipbuilding Corporation, Camden, N. J., which is greatly expanding its plant, will also build troop ships of the same type in the new part of its shipyard.

The Fleet Corporation will also authorize the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., to build a new plant at Richmond, Va., for the manufacture of reciprocating engines and boilers. It was considering plans for the doubling of the plant of the Sun Shipbuilding Co., Chester, Pa., but this project has been abandoned for the present.

Many contracts are being entered into with small boiler shops throughout the country for the fabricating of boilers for merchant ships.

Copper Consumption and Exports in War Time

The part played by copper in the war is clearly brought out by the following table showing American consumption and exports in the last five years in pounds:

	Domestic Consumption	Exports
1917.....	1,316,463,754	1,126,082,417
1916.....	1,429,755,266	784,006,486
1915.....	1,043,497,328	681,917,955
1914.....	620,445,373	840,080,922
1913.....	812,268,639	926,000,000

It is of interest to know that shipments of American copper to our allies in 1917—well over a billion pounds—were more than the total smelter production of this country no longer ago than 1911. In 1913 domestic consumption and our shipments to foreign countries about offset each other, with Germany our largest customer. In 1914, with its disturbance to all lines of American industry, our absorption of the metal was only 620,000,000 lb., or less than one-half the meltings in 1916 and 1917. Now home consumption and exports are about equal, with Germany, of course, eliminated from the list of export customers.

Fabricated Steel Business in May

The amount of bridge building and structural steel contracting in May was about 7000 tons less than in April. According to the records of the Bridge Builders and Structural Society, collected by George E. Gifford, its secretary, contracting for May totaled 60 per cent of the country's capacity or 108,000 tons, against 64 per cent for April. The total amount of business so far for the five months of this year is about 500,000 tons or 150,000 tons less than for the same period of 1917, or before the fabricated steel shipbuilding movement was a factor.

The society voted at its meeting on May 10 to request the Director General of Railroads to direct the railroads to issue acceptances to help "relieve a situation that is rapidly becoming both burdensome and critical to all who sell to the railroads."

A movement is on foot to erect a suitable monument in memory of Frank H. Buhl, the well-known iron and steel manufacturer, who died at Sharon, Pa., recently. The matter has been taken up by the Chamber of Commerce of Sharon and a committee was appointed to confer with Mrs. Buhl. Sharon, Farrell, Sharpville, West Middlesex and Wheatland will unite in the memorial.

Ordnance District Offices of Greater Scope

General Williams, acting chief of ordnance, has decided to place all the activities in each ordnance district under the supervision of a single head, and has nominated to fill the office of district chief in each district the men who were formerly at the head of the production division in such district. The order was issued on June 15 and the following gentlemen are now district chiefs in their respective districts: Levi H. Greenwood, Boston; Waldo C. Bryant, Bridgeport, Conn.; E. A. Russell, Chicago; C. L. Harrison, Cincinnati; Samuel C. Scovil, Cleveland; Fred J. Robinson, Detroit; John C. Jones, Philadelphia; R. M. Dravo, Pittsburgh; F. S. Noble, Rochester, N. Y. The New York district is vacant, owing to the resignation of Samuel G. Allen.

Announcement will shortly be made of the appointees to the offices of production division district managers to fill the vacancies created by the above appointments.

General Williams also announces the organization of the group of manufacturing specialists, each of whom will specialize on a particular phase of ordnance production. W. W. Coleman, president Bucyrus Co., South Milwaukee, and A. L. Humphrey, president Westinghouse Air Brake Co., Pittsburgh, will, for instance, specialize in the supervision of guns and carriages of all sizes and types. Until all the factories are producing smoothly, Mr. Coleman and Mr. Humphrey will go from one plant to another, co-ordinating the manufacture of one part of a carriage or gun with the manufacture of another part. Where a factory is engaged in making several kinds of munitions they will ignore everything but the products which they are co-ordinating.

C. E. Davis, New York, an engineer and manufacturer of experience, is assigned to supervision of the manufacture of fire control and other optical instruments required by the Ordnance Department.

J. R. Harbeck, vice-president American Can Co., will supervise the operations of all loading plants, including those in which fixed ammunition is assembled and loaded, and also those plants in which the loading of larger shells with explosives, and preparation of component charges for these larger shells is undertaken.

J. M. Young, plant manager American Can Co., and Herbert Wolff, vice-president American Car & Foundry Co. at Chicago, will follow the machining of shells of various calibers for mobile artillery.

H. H. Blood, Pratt & Whitney Co., Hartford, Conn., has been assigned to follow up production of fuses, boosters and adapters for shells of all kinds.

George C. Brainerd, general manager Hydraulic Pressed Steel Co., Cleveland, will follow up the production of shell forgings.

The services of this squad of specialists will not be required permanently, but until full production is obtained all along the lines they will continue to swing around the circle of zones from time to time. By keeping in touch with the district offices they will be able to keep the district chiefs informed of progress and methods in other districts.

To Increase Brazilian Manganese Output

The firm of Wigg, owner of one of the largest manganese properties in Brazil, expects to increase its production considerably. The mine is situated at Burnier, in Minas Geraes, 300 miles from Rio de Janeiro. A new installation will consist of an electrical generator to develop 150 hp., thereby electrifying all the power requirement of the mine, replacing the 10 separate steam units now in use. It is expected that the production of the mine will be increased from 120 to 180 tons daily.

What is claimed to be the smallest and lightest practical set of electrical testing instruments has been brought out by the General Electric Co., Schenectady, N. Y. The line includes alternating and direct current ammeters, voltmeters and wattmeters, which are applicable to all commercial frequencies and wave forms.

Barred Industrial Zone in Eastern States

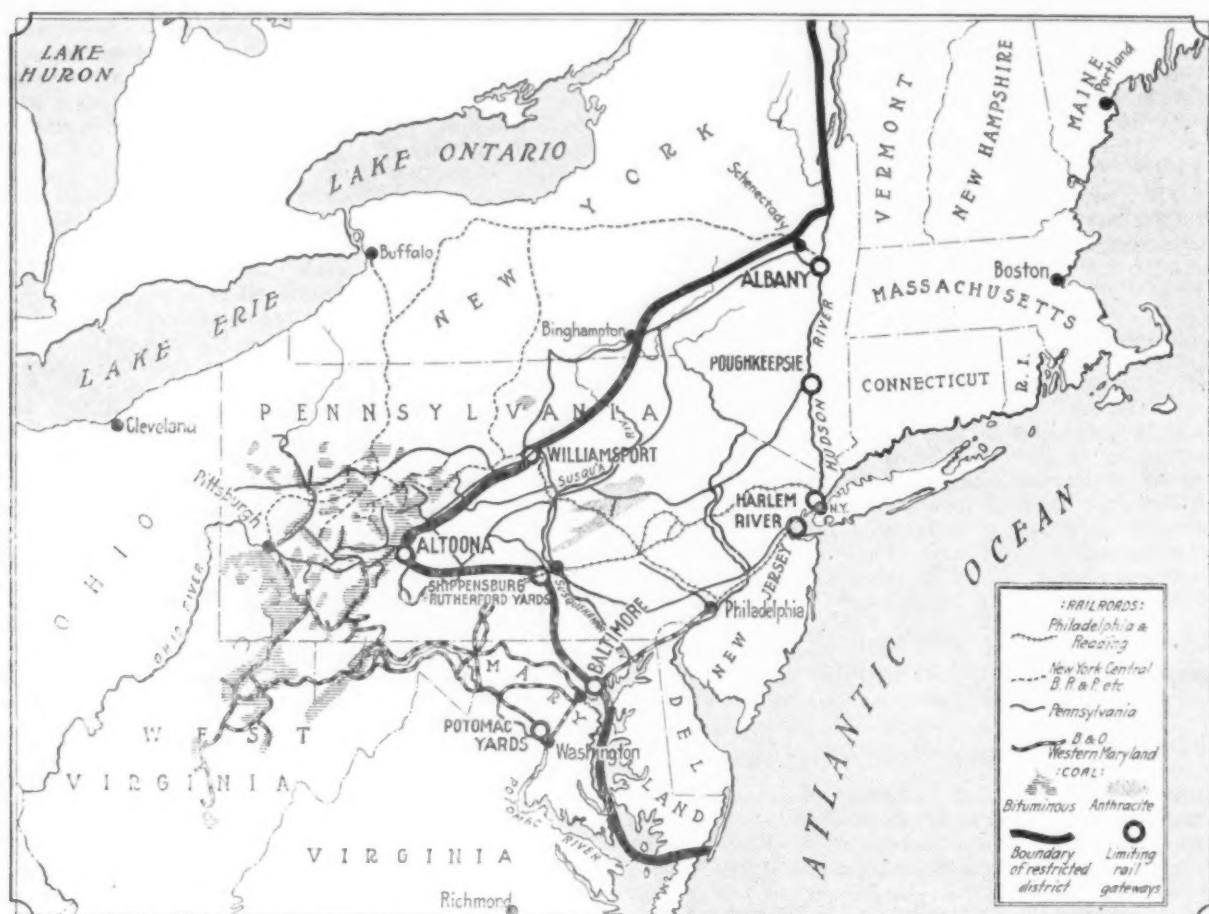
No New Manufacturing Plants to Be Built in It Because of Present Congestion and Impossibility of Getting Coal

WASHINGTON, June 18.—What has been denominated a "red flag" zone, within which no more manufacturing plants will be allowed to be established, has been created by the joint edict of the War Industries Board and the Fuel and Railroad administrations. The restricted area, which comprises the New England States, eastern Pennsylvania, New Jersey and Delaware, and eastern Maryland exclusive of Baltimore, will be barred because it is already so congested with steel works, munition plants, factories of all kinds and shipyards that it is practically impossible to secure adequate supplies of labor, coal and satisfactory transportation facilities for existing

require enlargement to meet the demands of the Government. As the result of the wide circulation given to this memorandum a brief statement of the Government's plan found its way into the press and was promptly followed by a deluge of letters of inquiry and protest, as the result of which it was deemed advisable to issue the order without further delay.

No Coal for More Plants

While it is intended that the restrictions embodied in the new ruling shall be carefully observed, a large measure of discretion will be exercised by the War Industries Board in considering applications for exten-



Limits of the Barred Industrial Zone Created by the War Industries Board and the Fuel and Railroad Administrations

concerns. This congestion has been progressive during the past six months and the only remedy is believed to be the drastic step that has just been taken.

For several weeks the War Industries Board, at the suggestion of the Fuel Administrator, has had the establishment of a barred industrial zone under consideration, but has hesitated to promulgate a restrictive order until after an exhaustive investigation could be made of the probable effect of prohibiting the establishment of additional plants in so large and important an area as was proposed. With a view to obtaining expert opinion on the subject the project was reduced to a brief memorandum and together with a sketch map was submitted about a fortnight ago to the State fuel administrators in the region affected and to a few manufacturers operating typical plants which might

sions of existing plants and in very meritorious cases for the establishment of new plants. The Fuel Administrator has expressed the opinion that it is absolutely impossible to distribute more coal to the "red flag" district than is absolutely required to operate plants already established therein, and this opinion is based both on coal production and railroad facilities for its distribution. At the same time it is appreciated that there are some plants in the district which are making articles the production of which must be increased as a war necessity and that it is not practicable to secure such increase except by enlarging the existing plants. To establish additional plants outside the restricted area would be uneconomical and in certain cases impracticable if not impossible. Engineering difficulties, impossibility of securing experienced labor

and the impracticability of establishing a divided supervision stand in the way of increasing production in such cases by locating new plants outside the restricted zone.

The shipyards embraced within the barred district are understood to be exempted from restrictions and more or less enlargement of their capacity will be permitted, although Director General Schwab of the Emergency Fleet Corporation is on record as opposing any very great enlargement of Atlantic seaboard yards by the construction of additional shipways. Southern yards, and especially those of the Gulf coast, will be encouraged to increase their capacity. In the case of all of the shipyards, however, the requirements as to coal, steel and other materials have been granted the highest priority, and if there is any shortage of fuel or materials in the new "red flag" district the shipyards will not be the establishments to suffer.

Boundaries of Restricted District

The eastern boundary of the restricted district is the Atlantic Ocean. The western boundary starts at the Canadian line in northern New York, a short distance west of Lake Champlain, runs south to Saratoga, thence southeast, skirting on their western limits the cities of Schenectady and Binghamton, N. Y., and Williamsport and Altoona, Pa. From Altoona the line runs due east to Shippensburg, thence southeast to Baltimore, which city it skirts on the east, after which it follows the Chesapeake Bay shore to a point near Claiborne, where it straightens out and runs due east to the Atlantic Ocean. Considerable thought has been given to the question of including the city of Schenectady in the barred zone because of the necessity of enlarging certain important plants manufacturing electrical apparatus, locomotives, etc., at that place. To protect the Albany gateway, however, it was finally decided to bring this city within the "red flag" area. Similar consideration was given to Altoona, but the importance from a railroad standpoint of that city, with its repair shops and great mileage of railroad tracks, induced the board to carry the boundary line to the west so as to include the entire municipal limits. The situation in Baltimore was found to be peculiar in that in spite of the proximity of Sparrows Point and other important manufacturing establishments there is still a good supply of labor and numerous desirable locations for plants. It was finally decided to leave Baltimore outside the barred zone.

From the standpoint of the iron and steel industry the new zone is of much importance. While it does not include the Pittsburgh district, it does embrace the Bethlehem and Midvale plants, the steel works and shipyards at Sparrows Point and all the manufacturing establishments in Delaware and New Jersey. No part of the district has it been more necessary to safeguard than Connecticut, with its hundreds of large and small factories, which have absorbed not only all the neighborhood labor but large importations of foreigners. The coal supply question has been of special importance in New England because of the severe winters, the difficulty of distributing coal even under normal conditions, and the fact that a large proportion of the shipping facilities heretofore relied upon for the distribution of coal have been commandeered by the Navy Department and the Shipping Board.

The Official Order

The official statement establishing the "red flag" district is as follows:

A policy has been adopted and made effective for preventing further increase in the volume of war orders and the number of establishments handling them in the area known as the congested manufacturing and transportation district. This district comprises the New England States; eastern and southern New York; Pennsylvania as far west as Williamsport and Altoona; all of New Jersey and Delaware; eastern Maryland, not including Baltimore.

Exceptions to this policy will be made only if unavoidable through inability otherwise to provide for war needs.

The congested district comprises those Eastern States in which so large a proportion of war industries is located as to make it difficult to supply all with necessary raw material and fuel. This difficulty obtains because coal for those

industries is mined in the territory west of the Allegheny Mountains. It must be carried into this congested district by a limited number of railroad lines and by ships from Hampton Roads and Baltimore.

The amount of coal, therefore, which can be transported into this congested area during any one season is limited, and is an entirely separate problem from the production of coal. However much coal is mined in western Pennsylvania, West Virginia and Ohio, only so much is available for this congested district as the railroads and ships can transport into it.

A careful analysis of the possible coal movement shows that the increased industrial activity in those eastern States has created a requirement for coal which exceeds the limit of possible transportation of coal, plus necessary materials for manufacture. A map of the congested and restricted district has been issued to all Government departments.

More Sailings from South Atlantic Ports

The creation of the restricted district as above provided will have a powerful influence in developing the importance of the Atlantic ports south of Baltimore. Ever since the coal crisis arose last February the Railroad and Fuel administrations have used every available device to divert traffic from the north Atlantic ports to Newport News and other southern harbors. The Shipping Board is now co-operating in this movement and a considerable percentage of Government freight destined for France will be routed via those ports and conveyed abroad by transports and chartered vessels. It is probable that there will be a very great increase in the near future in the regular sailings from south Atlantic ports as the result of the establishment of the barred industrial zone.

Rate of Ingot Production Shows a Slight Loss in May

The daily rate of production of steel ingots showed a slight reduction in May from that of April, according to the monthly figures compiled by the American Iron and Steel Institute. These show that in that month 3,256,965 gross tons was produced by 29 companies, which in 1916 made 88.14 per cent of the total ingot production. While the total for May is larger than for any month since October, 1917, when the record was 3,351,935 gross tons, the daily rate for 27 working days was 120,628 tons, compared with the daily average of 121,670 tons in April. Assuming that the 29 companies made 88.14 per cent of the ingots in May as they did in 1916, the May output for the country would total 3,695,215 gross tons, or at a yearly rate of 42,289,000 tons, counting 309 working days to the year. In the table below the ingot production of the 29 companies is given by months for the past 12 months, all figures representing gross tons:

	Open Hearth	Bessemer	All Other	Total
June, 1917	2,265,772	809,552	8,605	3,083,929
July	2,152,479	777,171	9,465	2,939,115
August	2,251,013	863,873	8,331	3,123,217
September	2,195,556	770,064	6,639	2,972,259
October	2,475,754	870,494	5,687	3,351,935
November	2,384,218	772,489	9,550	3,166,257
December	2,195,832	524,084	13,806	2,733,722
January, 1918	1,763,356	429,588	10,901	2,203,845
February	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410
May	2,444,863	796,244	15,858	3,256,965

The payroll of industries in the Youngstown, Ohio, district for May is given as \$6,911,339, being \$809,000 larger than for April, and \$587,000 larger than ever before paid out in a single month. The May disbursements included a 15 per cent wage advance in some industries. Wage disbursements in the Youngstown district for the first five months of this year total \$30,615,998 against \$24,487,134 in the same period of 1917. It is expected that the payroll of the Youngstown district for the year 1918 may reach between \$70,000,000 and \$80,000,000, against about \$65,000,000 in 1917, and \$45,000,000 in 1916.

TO STOP LABOR ADVERTISING

Government Bureau Extending Its Service— Motor Trucks to Save Men

WASHINGTON, June 18.—While the recent appeals of the Department of Labor to manufacturers to apply to the United States employment service for workmen instead of seeking them through their own employment bureaus or other private channels have met with a fairly satisfactory response, the department has found in many instances that although manufacturers have applied to the employment service they have continued an advertising campaign that has practically nullified the efforts of the Government agency to provide the desired labor. On this account the Secretary of Labor has issued a request to all employers to cease advertising and to use the Government service. To all who are now advertising for workers or seeking them through private channels, the department is now making an appeal, saying among other things:

We have 350 branch offices in all parts of the country, 17,000 recruiting agents, virtually in every county, and a daily intelligence system which keeps us informed of the employment situation in every section. We are finding and placing 6000 men a day. Why not stop advertising and ask us to get your men? It will cost you nothing and you save on advertising.

Common Labor Shortage

A report upon an employment survey covering the situation on June 1 has been made by the employment service that shows an improved condition of affairs with respect to the skilled trades, but a serious common labor shortage. In all districts there is a lack of balance due to faulty distribution which the employment service is making every effort to rectify.

Mechanics are wanted in 28 cities, while supply and demand are even in 55, and a surplus is reported by four cities in the West. The surplus mechanics are for the most part automobile and electrical workers and from no city is there a report of more machinists and tool workers than it can use. Twenty-six cities are calling for more boiler makers, blacksmiths, drop forgers, coppersmiths and other skilled craftsmen. There is still great idleness among the building trades. Carpenters, plasterers and others are without employment in 31 cities, while only eight report a shortage.

Out of 105 industrial centers covered, 75 report a shortage of common laborers, while but 23 report normal conditions, and seven a surplus. During the previous week 56 cities had shown a shortage. The demand for women in factories is steadily growing in the North and East, where 30 cities report a shortage. Three Southern cities show a surplus and 54 report normal conditions.

College Men in Munitions Work

College men enrolled in the Public Service Reserve's "war service during the summer vacation" campaign will perform a variety of essential work. Among the plants that have expressed willingness to employ college men to augment their man power this summer are the following representative firms:

Winchester Repeating Arms Co., New Haven, Conn.; Savage Arms Corporation, Utica, N. Y.; Root & Van Dervoort Engineering Co., East Moline, Ill.; Semet-Solvay Co., high explosives, Syracuse, N. Y.; Allis-Chalmers Mfg. Co., Milwaukee; Chase Metal Works, Waterbury, Conn.; New York Air Brake Co., Watertown, N. Y.; Warner & Swasey, Cleveland, Ohio; West Penn Steel Co., Brackenridge, Pa.; A. M. Byers Co., Pittsburgh; Brown & Sharpe Mfg. Co., Providence, R. I.; and the Klauder-Weldon Dyeing Machine Co., Yardley, Pa.

Many More Motor Trucks to Be Used

Wider use of motor trucks for rural express systems is not only being planned under the general supervision of the War Industries Board, but is being urged by the Department of Labor as a method of saving men and horses for essential war work. In addition, the movement is being encouraged by officials here to sup-

plement railroad transportation not only for farm produce but for the output of thousands of small manufacturing establishments in the North and East, many of which are working on war orders. An extended conference has just been concluded here between the Highways Transport Committee of the Council of National Defense and the chairmen of a large number of similar committees appointed by the various State councils of defense, the purpose being to form a national organization for the promotion of rural motor express routes to relieve railroad congestion. R. C. Wright, assistant director of traffic of the United States Railroad Administration, spoke on the necessity of promoting all possible motor truck transportation over highways to relieve the railroads of short haul freight and to release for war work men and horses heretofore employed in teaming.

The work of the Highways Transport Committee and its State auxiliaries is already showing in the marked increase in the demand for motor trucks, the production of which will no doubt occupy a large part of any facilities that may be released by restrictions placed upon the manufacture of pleasure cars by the War Industries Board. The production of motor trucks for heavy hauling and especially for use on express routes will probably be given preferential treatment by both the Priorities Committee and the Fuel Administration.

German Operation of the Polish Iron Industry

Before the war there were in Russian Poland 11 blast furnaces, 27 open-hearth furnaces, 62 re-heating furnaces and 25 puddling furnaces, but only a portion of these are now in operation, according to the London *Ironmonger* as reported by *Stahl und Eisen*. The furnaces at Dombrova in Russian Poland were blown in again last fall. The principal works are Huta Bankowa at Dombrova which before the war, for political reasons, were supported by the Russian authorities, the company being French. These works alone made rails, axles and wheels, the other works principally supplying sheets and merchant iron. At Dombrova also are the spelter works Konstantin and Pod Bezinem, which belonged to the Société Minière Franco-Russe. Before the war the Polish blast furnace works were at a considerable disadvantage as compared with the South Russian works, mainly owing to the insufficient supply of ore from South Russia, but now Dombrova is to be supplied as far as possible with ore from Austria. The Milovitz iron works, another important company in Russian Poland, have made numerous applications to the authorities for permission to resume operations. These works, which are affiliated with the Pushkin Iron Co., produce principally merchant iron, wire and railroad accessories. A few years before the war they built large extensions, but up to the present they have been unable to use them. Since the war operations have been at a standstill, and the company has suffered a heavy loss. Even if it is possible partly to resume operations at the Milovitz works, other works in Russian Poland, including several belonging to German firms, must remain idle for the present. This applies, for example, to the Hantke iron works at Rakov, near Czenstochow, in which the Upper Silesian Iron Industry Co. has an interest. Here there are two blast furnaces and five open-hearth furnaces. So far it has been impossible to resume operations at these and in other works owing to lack of raw materials, but the authorities are taking steps to overcome this difficulty.

The Wheeler Condenser & Engineering Co., Carteret, N. J., has acquired the exclusive right to manufacture and sell evaporating apparatus under the patents of S. Morris Lillie, president of the Sugar Apparatus Mfg. Co. This apparatus is of the multiple effect vapor reversing type for the concentration of waste waters or liquors in numerous industries which frequently are very dilute and contain only a small percentage of valuable solids.

Gorham Mfg. Co. in War Work

What it meant for the Gorham Mfg. Co., Providence, R. I., manufacturer of silverware, to take up manufacturing war material may be apprehended from a paper read by John S. Holbrook of that company before the American Society of Mechanical Engineers. Its various contracts included the following: Serbia, 50,000,000 brass cups for small arms (only two-thirds could be delivered), and 50,000,000 cupro-nickel cups, all delivered; France, 1,625,000 75-mm. cartridge cases; Russia, 1,000,000 75-mm. brass cases; Switzerland, 200,000 75-mm. brass cases; The Netherlands, 1,000,000 lb. of brass disks for small arms cartridges, 340,000 lb. cupro-nickel cups; Denmark, 230,000 lb. of cupro-nickel cups; British Government, 224,000 lb. of cupro-nickel cups; Norway, brass and cupro-nickel cups; Portugal, cups; Greece, brass disks and cupro-nickel cups; China, cups; Italy, part of an order for 275,000,000 each of brass and cupro-nickel cups; United States, 6,600,000 cups each of brass and of the gilding metal, 600,000 cases for 3-in. landing guns, 3,750,000 75-mm. cases for the Army, 200,000 practice grenades, 8,100,000 loaded grenades and 750,000 Stokes trench bombs.

"Finding that we had capacity over and above our usual business," Mr. Holbrook said, "we have taken the following orders in the silver and bronze plant which are already in progress: 270,000 cleaning rods for rifles; 15,000 powder cans; 600 aeroplane bomb sights; 500 gunners' quadrants; a large number of thumb nuts and screws; a considerable order for belt buckles, and 1500 gun sleeves for the French 75-mm. guns, bronze castings weighing 175 to 185 lb. apiece.

"The machinery and tools of the silver plant," he continued, "were in the main totally inadequate and impractical for the munitions work. Certain knuckle-joint presses in the machine shop of the silver plant were used for bullet cups, but the brass small-arms cartridges cups came from stock so heavy that it broke down our presses and we had to order special presses from the E. W. Bliss Co."

The equipment for the brass case shop, taking in the three units, is approximately as follows: Four cupping presses for making the first cupping from the disk; two indenting presses; 15 rack and pinion presses, which are drafting presses to make the second, third and fourth draw of the French cases; four heading presses; four tapering presses and 33 Bullard lathes.

German War Science Foundation

The German Kaiser has approved the foundation of a trust to further the development of scientific and technical aids to warfare, by uniting the scientific and the military forces of the country for work together. The scientific work is to be carried on by the following technical committees (or commissions):

1. Committee for the chemical raw materials for the production of munitions-manufacturing materials.
2. Committee for chemical war materials (powder, explosives, gas and the like).
3. Committee for physics, including ballistics, telephony, telegraphy, determination of targets and distances, measurements and the like.
4. Committee for engineering and communication.
5. Committee for aeronautics.
6. Committee for obtaining and preparation of metals.

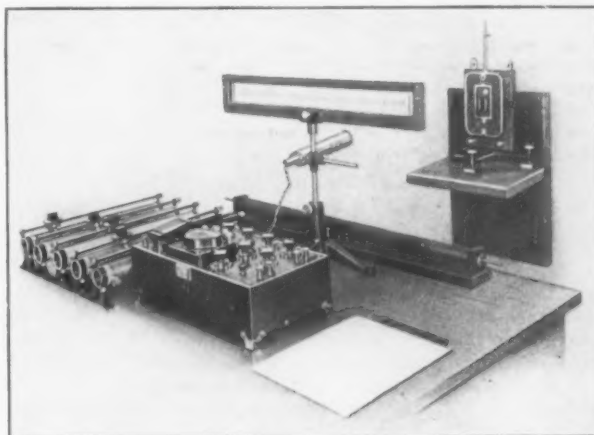
Decline in Barb Wire Exports

Barb wire exports have shrunk to about one-half what they were in earlier war periods. Official data show that for the nine months ended March 31, 1918, the total exported was 293,294,956 lb., as compared with 590,303,254 lb. and 582,082,023 lb. in the corresponding periods in 1917 and 1916. A year ago France took 192,624,792 lb., but this year in the same nine months' period only 33,287,924 lb. One reason for the decline is the Russian collapse. For the nine months ended March 31, 1916, Russia in Europe took 269,919,374 lb., but only 21,593,503 lb. in the same period in 1918. Barb wire exports in all of 1913 were only 183,793,572 lb., which fairly represents pre-war conditions.

Magnetic Apparatus for Testing Wire

An apparatus for testing purposes utilizing the correlation of the magnetic and mechanical properties of the material being investigated has been placed on the market by Herman A. Holz, 1 Madison Avenue, New York. This apparatus which is designed for what is termed the "magnetic-mechanical analysis" of iron and steel products is intended to give information regarding hidden flaws and inhomogenities in the material that cannot be detected by some of the testing methods now employed, such as hardness tests which are localized and give information about the condition of the surface only. It is possible with this apparatus to subject all of the material which will be utilized to a thorough investigation without injuring it by so doing.

In the apparatus illustrated, for example, the entire coil of wire or cable material which will be used in the construction of an aeroplane is drawn at a fairly con-



Wire for Aeroplanes Is Tested for Mechanical Defects, such as Hard or Soft Spots, Broken Strands, etc., by a New Magnetic Apparatus Utilizing the Correlation of the Magnetic and Mechanical Characteristics of the Material

stant speed through a solenoid containing a number of test coils. A defect, such as hard or soft spots, broken strands, etc., is indicated by the deflection of the galvanometer employed, a special resistance box being provided to control the sensitiveness of the instrument and also the current conditions. Equipped with a slightly modified form of solenoid, the same apparatus can be employed for testing the barrels of rifles and machine guns in either the unfinished or finished state, and it is also possible to test other products as hoisting and elevator cables, drill rods, springs, steel tubing, the rods used in the manufacture of roller bearings and the races for ball bearings, steel balls, etc.

Power and Weight of Aircraft Engine

The War Department authorizes the following statement of evolution in aircraft engines prepared by the National Advisory Committee for Aeronautics:

The first man-carrying airplane flights were made in December, 1903, with the Wright Brothers' engine, developing 12 hp. and weighing 12.7 lb. per hp. In 1910, seven years later, the average horsepower of aeronautic engines had increased to 54 and the weight decreased to 5.7 lb. per hp. In March, 1918, the Liberty 12 developed 432 hp. for a weight of 1.86 lb. per hp. By May, 1918, the Liberty 12 was yielding a maximum of 450 hp. for a weight of 1.83 lb. per hp. The Langley-Manly engine, built in 1901, was nine years ahead of its time in the matter of power output and 16 years ahead in its weight per hp., developing 52 hp. and weighing 2.9 lb. per hp.

Military enamels of some 10 different colors from dark gun finish through the military bronze, the olive drab and airplane khaki to a low visibility gray, are made by the Moller & Schumann Co., Marcy and Flushing avenues, Brooklyn, N. Y. A bulletin with samples of lacquers has been issued by the company.

STEEL RAIL OUTPUT IN 1917

Increase in Bessemer More Than in Open-Hearth
—Total, 2,944,161 Gross Tons

The American Iron and Steel Institute has just published the statistics of steel rail production in the United States in 1917. The total was 2,944,161 gross tons as against 2,854,518 tons in 1916. In 1915 the production was 2,204,203 tons; in 1914 it was 1,945,095 tons, and in 1913 it was 3,502,780 tons.

The distribution of last year's output according to weight shows a considerable change from that of 1916. In rails 100 lb. and over the change is slight—763,526 tons in 1917 and 766,851 tons in 1916. There was a considerable decrease in rails of 85 lb. and less than 100 lb., 989,704 tons in 1917 and 1,225,341 tons in 1916. Of rails weighing from 50 to 85 lb. the total last year was 882,673 tons, while in 1916 it was 566,791 tons. Of rails under 50 lb. the totals for 1917 and 1916 respectively were 308,258 tons and 295,535 tons.

The production of open-hearth rails in 1917 was 2,292,197 tons or 77.86 per cent; of Bessemer rails, 533,325 tons or 18.11 per cent; of all other rails 118,639 tons or 4.03 per cent. Bessemer rails increased by 93,233 tons from the output of 1916 and open hearth rails increased 22,597 tons. "All other" rails, which represent rerolled rails, decreased 26,187 tons from the total of 1916.

Open-Hearth and Bessemer Rails

The production of rails by processes in gross tons in the period 1902-1917 is shown in the following table:

	Open-Hearth	Bessemer	Rerolled*	Electric Iron	Total
1902..	6,029	2,935,392	.....	6,512	2,947,933
1903..	45,054	2,948,756	.....	687	2,992,477
1904..	145,883	2,137,957	.....	871	2,284,711
1905..	183,264	3,192,347	.....	318	3,375,929
1906..	186,413	3,791,459	.....	15	3,977,887
1907..	252,704	3,380,025	.....	925	3,633,654
1908..	571,791	1,349,153	.....	71	1,921,015
1909..	1,256,674	1,767,171	.....	?	3,023,845
1910..	1,751,359	1,884,442	.....	230	3,636,031
1911..	1,676,923	1,053,420	91,751	462	2,822,790
1912..	2,165,144	1,099,926	119,390	3,455	3,327,915
1913..	2,527,710	817,591	155,043	2,436	3,502,780
1914..	1,525,851	323,897	95,169	178	1,945,095
1915..	1,775,168	326,952	102,083	.....	2,204,203
1916..	2,269,600	440,092	144,826	.....	2,854,518
1917..	2,292,197	533,325	118,639	.....	2,944,161

*Rerolled from old steel rails. Included with Bessemer and open-hearth steel rails from 1901 to 1910, inclusive.

†Small tonnages rolled in 1909 and 1910 but included with Bessemer and open-hearth rails for these years.

Alloy-Treated Rails

The production of alloy-treated steel rails in the years 1909-1917 is shown in the table below.

	Total Production, Gross Tons	Titanium	Other Alloys	Open-Hearth and Electric	Bessemer	85 and Under 100 Lb.	100 Lb. Over
1909	49,395	35,945	13,450	13,696	35,699	40,263	
1910	257,324	256,759	565	27,389	229,935	187,154	
1911	153,989	152,990	999	38,539	115,450	126,892	
1912	149,267	141,773	7,494	40,393	108,874	143,820	
1913	59,519	47,655	11,864	33,567	25,952	50,014	
1914	27,937	23,321	4,616	27,447	490	8,301	18,454
1915	24,970	21,191	3,779	24,367	603	6,555	16,432
1916	28,562	26,493	2,069	27,675	887	10,506	16,295
1917	16,535	15,273	1,262	16,535	.....	6,671	9,529

It will be noticed that the decline has been marked, particularly when compared with the period 1910-1912.

The production of renewed and rerolled rails in 1917 was 127,646 tons of which 9007 tons was rerolled from new seconds and new defective rails, etc., and 118,639 tons rolled from old rails. The output of light rails, or rails under 50 lb., from new material was about twice that from rerolled rails in 1917, or 201,642 tons against 106,616 tons.

The production of girder and high T-rails for electric and street railroads are included in the figures of total production given above. For recent years the tonnage was as follows: 1912, 174,004; 1913, 195,659; 1914, 13,889; 1915, 133,965; 1916, 127,410; 1917, 91,674 gross tons.

FOR MORE COKE AND PIG IRON

Close Regulation of Open-Top Car Supply—Coal Shortage Likely

WASHINGTON, June 18.—A concerted effort of important Governmental bureaus is being made to increase the output of coke and pig iron with a view to expanding production throughout the iron and steel industry, and as the result of a series of conferences between the War Industries Board and the Fuel and Railroad administrations, the car service section of the Division of Transportation has promulgated a series of rules for the guidance of all carriers in distributing open-top cars. Shortage of this equipment and its general use for hauling miscellaneous commodities have had much to do with the unsatisfactory movement of coal and coke and in some sections have even interfered with the handling of iron ore. Mr. Replogle, Director of Steel Supply, is giving special attention to the coke and coal problems and has solicited the co-operation of Director-General McAdoo in improving fuel transportation wherever the steel industry is affected. The new rules, which are addressed to all railroads, contain the following, among other provisions:

Open-top cars, suitable for the transportation of coal, coke, ore, or raw materials used in blast furnace operation, and available on roads producing the same in excess of the demand of such commodities, may be furnished for the transportation of stone, sand, and gravel, and when so furnished shall be used preferentially for highway maintenance materials. The return movement to mines or ovens should be utilized wherever practicable in furnishing car supply for stone, sand, and gravel. Every endeavor should be made, consistent with keeping up the production of coal, coke, ore, and raw materials used in blast furnace operation, to furnish shippers of stone, sand, and gravel with a minimum of 40 per cent of their normal weekly transportation requirements.

Roads which are not producers of coal, coke, or ore must not use foreign open-top equipment for stone, sand, or gravel shipments, except for one load in the course of the return movement to mines or ovens.

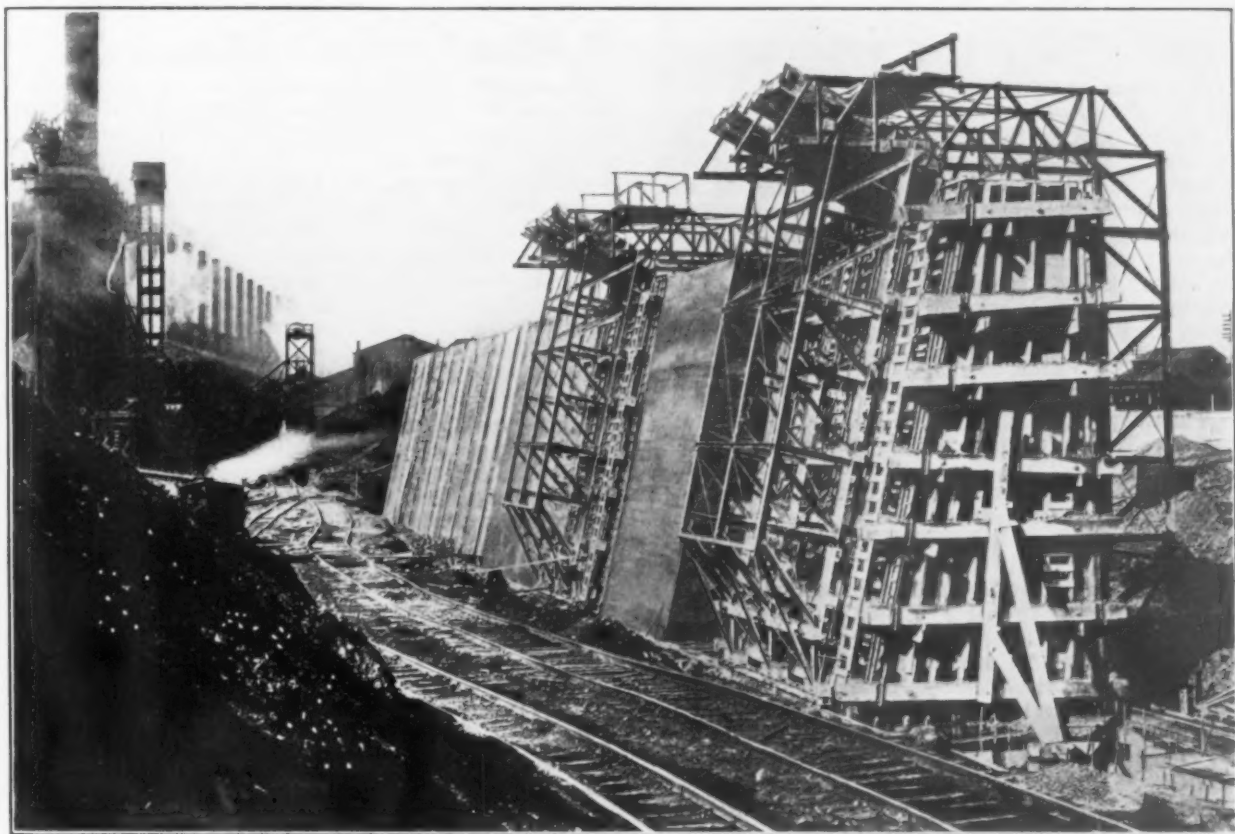
It must be understood that car supply for stone, sand, and gravel must not be permitted to jeopardize the essential production of coal, coke or ore. If at any time such a result is apparent on individual roads, or generally, orders will issue immediately to curtail the car supply for stone, sand, and gravel.

An intensive campaign to increase the production of coal and coke has been started by the Fuel Administration. To that end Administrator Garfield announces the organization of a production bureau, to be headed by James B. Neale. The work in behalf of bituminous production must be greatly speeded up. Although a weekly average of about 11,700,000 tons of bituminous coal was produced during May, the coal requirements of this war have increased to a point where a shortage of coal is practically certain. This shortage may reach 50,000,000 tons. The new bureau will undertake to increase the efficiency of individual mines and miners, in both the bituminous and anthracite industry.

The constantly increasing demand for fuel for war purposes in the East has made necessary further restrictions on the westbound movement of bituminous coal. The Fuel Administration is preparing an order, to be effective June 20, which will prohibit the movement of bituminous coal westbound from coal operations located on the line of the Chesapeake & Ohio Railway in Kanawha district east of and including St. Albans, W. Va., except under permits.

Through a plan recently put into operation by the Merchants' and Manufacturers' Association, Baltimore, whereby all firms in a position to supply the Government with materials and articles necessary for war use, the association has been able to be of considerable help to the various departments in Washington and at the same time place the manufacturers in closer touch with the needs of the Government.

Jacks Pushing against the Trusses of the Traveler Are Employed to Hold the Members of a New Steel Form for Concrete Construction Together Instead of the Customary Tierods



New Concrete Construction Steel Form

In the construction of a concrete wall 34 ft. high and 30 ft. long with a base measuring 18 ft. at the bottom and tapering to 10 ft. at the top by the Stone & Webster Corporation at the plant of the Brier Hill Steel Co., Youngstown, Ohio, a new type of steel form made by the Blaw-Knox Co., Pittsburgh, is being used. The principal distinguishing feature about this new form is the elimination of the generally employed horizontal and vertical tierods spaced on approximately 5-ft. centers and the substitution of jacks pushing against the trusses of the traveler as the means for holding the forms together. The advantages claimed for this type of design are that it is possible to calculate all of the stresses before the work is started, a saving in labor and time since the bulkheads are hinged to the form, and also the possibility of maintaining a definite schedule of construction.

The form consists of two sections, the first of which has two bulkheads weighing about 10 tons each. The forms are held together by jacks pushing against the trusses of the traveler which are held at the top by cross-girders and at the bottom by struts placed against offsets in the concrete foundation or by large heavy removable horizontal steel rods spaced on 10-ft. centers. When the struts and some bolts are removed, it is possible to swing the bulkhead which is hinged to the form open the same as a door. This first section runs ahead and casts individual blocks, while the rear section which has no bulkheads but overlaps a few inches on the concrete blocks cast by the first section, follows and fills up the gaps between the blocks.

In operation the front section is moved and set in the forenoon and if the mixer on the job has sufficient capacity, the form can be poured in the afternoon. It is explained that in hot weather a section can be removed early in the morning and used again in a similar manner, thus making possible the use of a section once every day, although the general practice is to lay the work out so that the same section is used every other day. In this way the daily progress consists of

a block of the same length as the form sections. These sections can be adjusted for different cross-sections of wall.

Amount of Fuel for Building Pleasure Cars Cut 75 Per Cent

Fuel Administrator Garfield on June 12 confirmed a statement in regard to the curtailment of fuel for the manufacture of pleasure automobiles. He stated that the general question of curtailing this industry is now in the hands of the Steel Section of the War Industries Board. He feels responsible to limit the amount of fuel used in the manufacture of pleasure automobiles to whatever extent the national situation demands, but he made it plain even if steel is available for a larger production he will be compelled to limit the fuel for the manufacture of pleasure automobiles in the season 1918-19 to not over 25 per cent of that consumed for this purpose in the season 1917-18.

This curtailment does not affect the manufacture of trucks or other cars for war use nor the enormous amount of other war material which the automobile companies have already undertaken for the Government.

The Christiania Staalverk has decided to increase its capital from £83,333 (at par exchange) to a minimum of £666,667, and a maximum of £888,889, for the purpose of establishing a rolling mill with an annual capacity of 50,000 tons of steel plates, according to the *London Iron and Coal Trades Review*. The minimum capital has already been guaranteed, and the government has undertaken to submit a proposal to the Storting that the Norwegian State shall guarantee a loan of £416,667, to be repaid in 40 years. The government has further undertaken to submit a proposal to grant the company a subsidy of 6s. 8d. per ton for five years on certain conditions. The company is also promised the grant of a 60 years' concession for acquiring waterfalls and building power stations.

Drop Forgers' Convention

The annual joint convention of the two associations connected with the drop forging trade, namely, the American Drop Forge Association and the Drop Forge Supply Association, will be held in Buffalo, June 20, 21 and 22 at the Hotel Iroquois.

The sessions on Thursday and Friday will be taken up with the discussion of technical papers, and on Saturday morning trips have been planned to steel works and forge plants in the vicinity of Buffalo. On both days the delegates to the convention will be the guests of the associations at luncheon and dinner. For the ladies there will be automobile trips to East Aurora and to points of interest around Buffalo. It is expected that fully 85 per cent of the drop forging capacity of the country will be represented.

The program is in part as follows:

Thursday, June 20, 10 a. m.: Address by the president, R. T. Herdegen, Dominion Forge & Stamping Co., Walkerville, Ont. Report of secretary and treasurer, E. B. Horne, Packard Motor Car Co., Detroit.

Thursday Afternoon: "Welfare Work in Forge Shops," by E. E. Adams, Cleveland Hardware Co.; "Powdered Fuel for Drop Forge Furnaces," by H. D. Savage, vice-president Locomotive Pulverized Fuel Co.; "Cost Figuring of Drop Forge Dies," by S. A. Keller, Keller Mechanical Engraving Co.; "Should Forgings Be Sold Direct or Through Brokers?" discussion lead by T. W. Siemon, vice-president Union Switch & Signal Co.; "The Electrical System of the Forge Shop," by Edward McIlvried, Champion Machine & Forging Co., and "Steels for Gears," by G. A. Richardson, Midvale Steel Co.

Friday, June 21, 10 a. m.: "Cost of Heating of Steel," by C. K. Reid, engineer, Dominion Forge & Stamping Co.; "Quenching Oils for Forgings," by George W. Pressell, chief chemist, E. F. Houghton Co.; "Treatment of Piston Rods," by George C. Stebbins, superintendent, Wyman & Gordon Co.; "Electric Steel Making Essential to Forging Industry," by A. V. Farr, Hess Steel Corporation, and moving pictures, showing thermit welding of crankshafts and gears, by W. R. Hurlbut, Metal & Thermit Corporation.

Afternoon Session, 1.30 p. m.: "Forge Shop Construction," by J. T. N. Hoyt, Detroit; "Electric Furnaces for Heat Treatment of Forgings," by T. F. Baily, president, Electric Furnace Co. of America; "Hardening of Die Blocks," by Dr. Gustave Peterson, Alloy Steel Spring Co., Jackson, Mich., and "Thermal Refinements of Gear Blanks," by C. R. Poole, Frost Gear & Forge Co.

The committee in charge of the local arrangements is Guy A. Hagar, chairman, Lackawanna Steel Co.; Raymond Baldwin, J. H. Williams & Co.; David Bell, Buffalo Foundry & Machine Co.; George I. Allen, Heppenstall Forge & Knife Co., and J. M. Schlendorff, Central Steel Co.

Ferguson Shipbuilding Plant on Buffalo River

Contracts have been let and construction has been commenced on the shipbuilding plant on Buffalo River to be built and operated by the shipbuilding department of the Ferguson Steel & Iron Co., Buffalo. The new yard has a frontage of nearly 3000 ft. on the river between the bascule bridge at Abbott Road and the bridge of the Lackawanna Railroad. The yard will be 800 ft. in width and will adjoin the plant of the Donner Steel Co. The shipbuilding plant will consist of four shipways, arranged for side launching, each way of sufficient length to accommodate a vessel 150 ft. long; and there will be additional space at one end of the yard for the construction of six 150-ft. barges at one time. The erection buildings will be of fabricated steel and brick, requiring 1000 tons of steel.

The Ferguson company has a contract from the Government for construction of six sea-going tugs and 16 canal barges, all to be 150 ft. in length and of steel. It is expected that this first contract will be completed before the close of navigation this Fall.

Milwaukee Preparing for Foundrymen

Representative men of the foundry and metal-working trades of Milwaukee, Wis., met in that city June 13 to discuss with officials of the American Foundrymen's Association the conventions of that body, the American Institute of Metals, the iron and steel section of the American Institute of Mining Engineers and the American Malleable Castings Association, also the exhibit of foundry and metal working machines and equipment, all to be held in Milwaukee in the week of Oct. 7. The meeting was attended by B. D. Fuller, president American Foundrymen's Association; A. O. Backert, secretary-treasurer, and C. E. Hoyt, a director, and manager of the machine and foundry equipment exhibit. The meetings will be held in Milwaukee's big auditorium to which has been added a machinery hall 180 x 300 ft. in size.

In addition to representatives of iron and steel casting firms there were present at the meeting, which was preceded by a luncheon at the Hotel Pfister, representatives of the local Chamber of Commerce. The association representatives explained the magnitude of the convention gathering and its many phases of activity. R. P. Tell, of the National Brake & Electric Co. and president Metal Trades and Founders' Association of Milwaukee, introduced Theodore Vilter, Vilter Mfg. Co., Milwaukee, who declared that his city would do its utmost to make the coming meetings a success. Mr. Vilter was made general chairman of the local committees. It was agreed that the conventions will be conducted in a way that will best serve the interests of the nation, the main thought being to give intensive study to the manufacture of munitions and the development of methods and machines for that purpose. It is planned to have present on the opening day a national administration official who can speak from first-hand knowledge of war needs, aims and progress. But few production men will attend the meetings, and therefore there will be no loss in the country's output, but it is believed that much will be gained by dissemination of knowledge of what war experience has so far developed in methods and practice.

The application for exhibit space, though the official blanks have not yet been circulated, are more numerous than at the same stage in previous years. Heretofore the malleable castings people have met as a section of the American Foundrymen's Association, but this year they will meet under the auspices of the American Malleable Castings Association.

Output of Dominion Steel Corporation

The annual output of the Dominion Steel Corporation, Sydney, N. S., to March 31, 1918, compared with the previous year, was as follows:

	Production for Year Ended March 31	
	1917 Tons	1918 Tons
Pig iron	346,926	332,231
Steel ingots	377,079	374,332
Blooms and billets for sale	144,051	139,557
Rails	17,495	17,103
Wire rods for sale	67,492	73,650
Bars	5,259	1,542
Wire*	35,142	27,165
Nails	20,175	16,347

*This includes wire used in the manufacture of nails shown in next line.

The output of ingots remains practically at the figure attained in the two previous years, beyond which no considerable advance is expected until the new works now under construction are in operation.

At a meeting of the board of directors of the Barney & Smith Car Co., Dayton, Ohio, held in Cincinnati last week officers were elected to replace those who recently resigned. W. D. Sullivan, formerly purchasing agent of the company, was chosen vice-president and general manager; F. E. Healey, formerly with the Dayton Metal Products Co., was made general superintendent and chief engineer. The appointment of M. Zapoleon as secretary and treasurer was confirmed. A new president has not yet been selected.

RAILROAD EXPENDITURES

Car and Locomotive Accessories Allocated—
Additions and Betterments for 1918

WASHINGTON, June 18.—Following negotiations that have consumed much valuable time, the Railroad Administration has finally announced awards to manufacturers for accessories and equipment for 1025 locomotives and 100,000 freight cars, orders for which have heretofore been placed. The purchase of accessories has been arranged for by the Railroad Administration on a more liberal basis than that employed with reference to locomotives and freight cars, which were figured on an exceedingly small margin of profit on the ground that engine and car building as at present carried on is an assembling rather than a manufacturing proposition. While no figures have been made public with regard to the purchase of accessories it is understood that manufacturers are allowed profit margins estimated at 10 to 15 per cent. In many cases the devices are patented and royalties are required to be paid by the producers.

The actual purchase of these accessories will be made by the companies to which contracts have been awarded for locomotives and cars and which were placed on a form of contract guaranteeing a fixed profit and including a schedule of accessories figures at arbitrary prices subject to readjustment upon the conclusion of the negotiations which have just been completed. Notifications will now be sent to all locomotive and car contractors concerning the accessories contracted for and the prices which are to be substituted for arbitraries included in the original schedules.

In the following list are given brief descriptions of some of the accessories followed by the number of engines to be equipped with the several types for which orders have been placed:

Locomotives

Tender truck bolsters, all locomotives, Pittsburgh Steel Foundry Co.
Air brakes, 775, Westinghouse Air Brake Co.; 250, New York Air Brake Co.
Side frames for freight engine tenders, 550, American Steel Foundries; 475, Buckeye Steel Castings Co.
Brake shoes, all engines, American Brake Shoe & Foundry Co.

Freight Cars

Truck bolsters: 46,000, American Steel Foundries; 21,000, Buckeye Steel Castings Co.; 21,500 Scullin Steel Co.; 8,000, Gould Coupler Co.; 3,000, Bettendorf Co.
Couplers: 23,000, American Steel Foundries; 15,500 Buckeye Steel Castings Co.; 7,500, Gould Coupler Co.; 8,000, McConway & Torley Co.; 46,000, National Malleable Castings Co.
Side frames, cast steel: 35,000, American Steel Foundries; 14,500, Buckeye Steel Castings Co.; 16,000, Scullin Steel Co.; 6,500, Gould Coupler Co.; 28,000, Bettendorf Co.
Pressed steel ends, 50,000, Pressed Steel Mfg. Co.
Friction draft gear: 50,000 (Sessions), Standard Coupler Co.; 25,000, Westinghouse Air Brake Co.; 19,000 (Caldwell), Union Draft Gear Co.; 6,000 (Murray), Keyoke Railway Equipment Co.
Brake shoes, all cars, American Brake Shoe & Foundry Co.
Draw bar yokes: 50,000, Union Draft Gear Co.; 50,000, Buckeye Steel Castings Co.
Air brakes: 75,000, Westinghouse Air Brake Co.; 25,000, New York Air Brake Co.

The Director General of Railroads has approved budgets for additions and betterments for all railroads and terminal companies for the year 1918. The total expenditures authorized amount to \$946,293,828, of which \$482,417,179 will be expended for equipment. The largest single item in equipment is \$206,994,914, the estimated cost of freight cars, which is closely followed by authorized disbursements of \$199,075,420 for locomotives. The largest item in the construction account is \$98,661,553 for additional yard tracks, sidings and industry tracks, which is exclusive of additional main tracks, the cost of which is put at \$47,471,002. Rails and other track material are estimated to cost \$31,556,115, and bridges, trestles and culverts, \$38,035,762. The roads are greatly in need of additional shops, engine houses and appurtenances, and for this purpose the budget includes \$61,979,476, while shop machinery and tools are put in at \$10,544,138, and electric power plants, sub-stations, transmission lines, etc., at \$10,771,256. A summary of the budget is given.

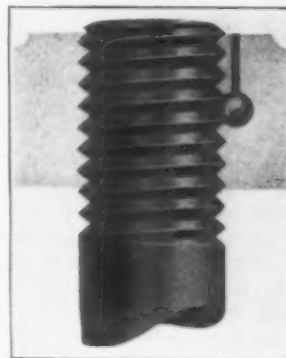
It will be noted that all the items included in the above list are to be charged to capital account; hence

Approved Budgets for Additions and Betterments for All Railroads and Terminal Companies

Class of Work	Capital Expenditures
Widening cuts and fills, filling trestles, etc.	\$4,969,818
Ballasting	3,524,589
Rails and other track material	31,556,115
Bridges, trestles and culverts	38,035,762
Tunnel and subway improvements	2,195,242
Track elevations or depressions	6,691,178
Elimination of grade crossings	7,784,782
Grade crossings and crossing signals	640,191
Additional main tracks	47,471,002
Additional yard tracks, sidings and industry tracks	98,661,553
Changes of grade or alignment	6,363,527
Signals and interlocking plants	11,147,726
Telegraph and telephone lines	5,031,297
Roadway machinery and tools	954,869
Section houses and other roadway buildings	1,510,546
Fences and snowsheds right-of-way, snow or sand fences	817,641
Freight and passenger stations, office buildings, etc.	22,940,636
Hotels and restaurants	199,282
Fuel stations and appurtenances	6,164,839
Water stations and appurtenances	13,447,816
Shop buildings, enginehouses and appurtenances	61,979,476
Shop machinery and tools	10,544,138
Electric power plants, sub-stations, transmission lines, etc.	10,771,256
Wharves and docks	3,236,167
Coal and ore wharves	7,024,937
Grain elevators and storage warehouses	2,954,202
Real estate	3,357,070
Assessments for public improvements	1,171,490
All other improvements	28,491,978
Total (excluding equipment)	\$445,639,225
Locomotives	\$199,075,420
Freight-train cars	206,994,914
Passenger-train cars	28,340,446
All other equipment	12,963,109
Improvements to existing equipment	35,043,290
Total equipment	\$482,417,179
Construction of extensions, branches and other new lines	\$18,237,424
Total all expenditures	\$946,293,828

current revenues will be drawn upon for this purpose only to the extent of paying the interest on the securities issued to provide the necessary funds. W. L. C.

A locknut which makes use of the wedging of a ball into the sides of the bolt threads as the means for locking has been brought out by the Everite Nut Corporation, Marquette Building, Detroit. A somewhat different arrangement, however, is employed for keeping



The Ball at the Right Is Wedged Into the Threads by a Spring Behind It and Serves as a Lock. When the nut is to be released a small nail slipped down through the hole above forces the ball away from the thread.

the ball in contact with the threads and for releasing it when it is desired to unscrew the nut. The nut, called the Sta-Lok, is made from bar screw stock and has either United States standard or S. A. E. threads. A recess in which two hardened steel balls separated by a short coil spring are located is provided parallel with the upper and lower faces of the nut and extends half way in. When the nut is placed on the bolt the inner of these two balls rides in the groove between the bolt thread and is kept in contact with them by the action of the spring. This arrangement

is relied upon to keep the ball in such intimate contact with the thread that when the nut is moved in the reverse direction, the ball wedges between the thread and serves as a lock. If it is desired to remove the nut a small finishing nail is inserted in the hole in the upper surface and the locking ball is forced out of contact with the thread.

The Blaw-Knox Co., Pittsburgh, has removed its San Francisco office from the Rialto Building to its new offices and warehouse at 528-530 Second Street, San Francisco.

The Fate of the De Wendel Works

The confiscation by the Germans of the famous De Wendel steel works in Lorraine was announced some time ago, and it now appears that the division of the spoil has been less easy than might have been imagined. Originally the intention was to have the entire concern taken over by a syndicate of German steel works, belonging to the Stahlwerks Verband, in which the German Government would be interested. It was proposed, therefore, to form a limited company, in which 51 per cent of the capital would be held by the Imperial German Government, the kingdom of Prussia and Alsace-Lorraine, the remaining 49 per cent going to the steel works. This, however, lacked support. The Alsace-Lorraine Government then proposed that half the surplus ore, after the needs of the De Wendel plant were satisfied, should be smelted in Lorraine, but this did not at all suit the steel works interests.

Recently a fresh scheme has been put forward backed by the Allgemeiner Elektrizitäts Gesellschaft of Berlin, Augsburg-Nuremberg steel interests, the Esslingen works and the Lindenberg steel works near Remscheid. The result of these proposals is, it is said, to divide the De Wendel property into two parts by forming a metallurgical company and a mining company, the latter to supply the former with 3,000,000 tons of ore a year. The capital of the metallurgical company has been fixed at 200,000,000 marks and that of the mining company at 50,000,000 marks, the Imperial German Government subscribing 51 per cent of the capital in each case. The mining company's arrangements appear to have been approved, but there are difficulties regarding the metallurgical company—the trackers of the scheme having powerful competitors. The Stahlwerks Verband is split up into two groups—the Southwestern and Rhenish Westphalian. The former comprises the Lorraine, Thyssen, Stumm, Roehling and Dillingen interests; the other, practically all the remaining members. It has been suggested that the Southwestern group take 25 per cent of the shares, and the Allgemeiner Elektrizitäts Gesellschaft group and the so-called "Raumer" group, 24 per cent, the remainder, 51 per cent, being taken by the German Government. On the other hand several Lorraine municipalities have petitioned the Government of Alsace-Lorraine to transfer the entire De Wendel property to a limited company, in which Alsace-Lorraine should take the majority share holding, and to arrange to smelt in Lorraine the entire ore output from the De Wendel properties.

Power Factor Correction

Over-excited synchronous motors are the only commercially developed successful machines for general application to power factor correction, according to a paper presented before the Association of Iron and Steel Electrical Engineers in Pittsburgh, Jan. 19, by R. A. McCarty. To obtain the largest gain, he pointed out, these machines should be placed near the source of lagging reactive current. He also emphasized the desirability of maintaining a power factor of 80 per cent or greater. As regards the relation between line capacity and power factor, he gave the case of a mill which, operating on a power factor of 50 to 60 per cent, was burdened with overloaded lines. By the installation of a synchronous motor in place of one of the induction motors this power factor, he said, was improved and the overload removed.

A special bulletin on methods of protecting workmen from eye injuries caused by flying particles has been issued for free distribution among employers and employees by the Industrial Commission of Wisconsin. Employees are warned that the Wisconsin workmen's compensation act provides that if a workman does not wear goggles when proper goggles are provided by the employer, and he is injured, the compensation may be reduced 15 per cent as a penalty. On the other hand, employers are warned of their duty not only to provide goggles, but such devices as are proper and cause no discomfort or pain.

Manufacturers and Publishers Meet

An unusual meeting took place at a luncheon at the University Club, Chicago, June 17. The purpose of the meeting, which was held jointly by publishers of some thirty business and technical papers, and manufacturers, who are allied together for business in Europe through the Allied Construction Machinery Corporation, was to make a study of the details of products manufactured, to obtain a comprehensive idea pertaining to the capacity of the plants, and to establish a direct line of contact between the publisher and the manufacturer relative to merchandising methods. Beginning the following day, a trip is now being made to the plants of the different manufacturers represented, ending on Friday, June 28, when a meeting will be held at the Cleveland Athletic Club for discussion.

At the luncheon on June 17, addresses were made in part as follows: "Publicity in the Sales Program," by F. A. Smythe, president Thew Automatic Shovel Co., Lorain, Ohio; "The Publisher's Ability to Serve," by James H. McGraw, president McGraw-Hill Publishing Co.; "Visualizing Sales Through Publicity," by Charles F. Lang, president Lakewood Engineering Co., Cleveland; "Foreign Trade and American Manufacturers," by W. S. Kies, vice-president American International Corporation, New York; "Manufacturing Efficiency in War Time," by James H. Foster, president Hydraulic Pressed Steel Co., Cleveland; "The Value of Quality in Direct Appeal," by Carl A. Luster, president Clyde Iron Works, Duluth, Minn.; and "Conditions of the Iron and Steel Trade Now and After the War," by W. H. Taylor, president Iron Age Publishing Co.

D. H. Nichols, managing director Allied Publicity Bureau, Cleveland, is director of the trip; and S. T. Henry, vice-president Allied Construction Machinery Corporation, was toastmaster at the luncheon meeting on June 17.

Mr. Kies declared that in our concentration on war work we are likely to lose sight of preparedness for after war conditions. He anticipated trouble in adjusting labor when the war ends, but said that large volumes of business would justify a continuance of high wages and that the volume must come from export trade. Our expanded capacity should be utilized. He also said that the high ideals of the American people had wiped out much of the prejudice that had existed against the United States before the war.

Mr. Lang urged the need of having a group of men in this country whose business it would be to visualize after the war requirements while the rank and file carried on the war.

British Engineering Standards Association

The British Engineering Standards Association was registered in Great Britain on May 23 with an unlimited number of members, to take over the work carried on since 1901 by the Engineering Standards Committee and to prove and mark certain engineering materials. The first "main committee" is to consist of such of the following as consent to act: Sir John Wolfe Barry, chairman; Sir Maurice Fitzmaurice, vice-chairman; Sir Douglas Fox, Sir William Matthews, R. Elliott-Cooper, A. Ross, and Dr. C. Unwin—all nominated by the Institute of Civil Engineers; H. V. Ivatt, M. Longridge and Dr. W. H. Maw, from the Institution of Mechanical Engineers; G. Ainsworth, Dr. A. Cooper and I. Williams from the Iron and Steel Institute; Sir Archibald Denny, Sir W. E. Smith and Sir Thomas Bell from the Institution of Naval Architects; Col. R. E. B. Crampton, Sir J. Snell and C. P. Sparks from the Institution of Electrical Engineers; F. W. Gilbertson and F. R. Davenport, co-opted by the nominated members to represent the Federation of British Industries; Sir Charles Parsons, Sir Richard T. Glazebrook and Sir Robert Hadfield, co-opted by the nominated members.

The New York office of the J. Lipsitz Co., dealer in scrap iron, steel and metals, is now located in Room 1818 Woolworth Building.

German Steel Industry After the War

At the spring meeting of the Association of German Ironmasters at Düsseldorf on April 14 the president, Herr Vogler of the Deutsch-Luxemburg Mining Co., discussed the prospects of the German iron industry. The serious problems that would confront the country after the war, he said, could only be solved by restricting the one-sided professional training afforded by the high schools, and by giving students an insight into the great technical and economic questions. The war had brought entirely new ideas of economics, and the reform of professional training would therefore be an important duty of the association. It would also be their duty to see that the workmen had employment at good wages. When strikes broke out in Germany a few months ago, not a man in the iron industry laid down his tools. The ironmasters could best reward this loyalty by assuring the men steady employment all the year round. The time immediately after the war would be serious and hard.

The first task must be the reconquest of the lost export markets. In this connection the question arose whether it was necessary to strengthen and protect the iron industry at home by syndicates. Opinions as to their value differed. It might be argued that, especially after the war, independent undertakings with liberty of action would more easily regain a footing in foreign markets than could be done by the cumbrous machinery of a syndicate. But there was the danger that, owing to the unsettled conditions in the world's markets, much valuable national property might be wasted. Moreover, the authorities had distinctly given it out that official pressure would be brought to bear unless the works combined voluntarily. It had become clear that no combine could be successful which was a syndicate only in name, such as the Steel Works Union had lately become. The syndicates should not merely deal with production, but should also look after simplification of processes and the cheapening of manufacture, as they were originally intended to do.

August Thyssen and the past-president, Dr. Springorum, were elected honorary members of the association, and the latter, in recognition of his services in introducing the open-hearth process into Germany and in developing the Hoesch process, was awarded the Lueg medal. Professor Krugsch spoke about the part played by the French iron-ore deposits in supplying Germany's iron and steel industry, while Dr. Beumer, amid expressions of approval, again urged the necessity of annexing the Briey ore basin.

Austria-Hungary's Steel Output in 1917

Austria-Hungary's steel output in 1917 is published as 2,920,000 metric tons, compared with 3,340,000 tons in 1916 and 2,680,000 tons in 1913. Of the 1917 production Austria is credited with about 2,000,000 tons, Hungary with 690,000 tons and Bosnia with 24,220 tons. The rail output in 1917 was 150,607 tons, against 201,938 tons in 1916.

The annual meeting of the Cleveland Engineering Society was held June 11. A dinner was given at the University Club, Cleveland, following which addresses were made by J. H. Herron, retiring president of the society, and Dr. W. O. Thompson, president Ohio State University, Columbus. Dr. Charles S. Howe, president Case School of Applied Science, was toastmaster. Officers for the ensuing year were elected as follows: President, E. B. Thomas, consulting engineer; vice-president, Robert I. Clegg; permanent secretary, G. F. Black; directors, A. H. Bates, W. G. Stephan and S. W. Striebinger.

According to the U. S. Geological Survey, more sulphuric acid was produced in the United States in 1917 than in any previous year. A moderate estimate shows that the increase in the production of acid of all strengths in 1917 over that in 1916, stated in terms of 60-deg. B. acid, amounted to at least 600,000 tons.

Interior Reinforced Rocker Dump Car

A double side dump car of the rocker or cradle type has been brought out by the Orenstein-Arthur Koppel Co., Koppel, Pa. It has a capacity of 1 cu. yd. In general the construction is the same as the others of that type built by this company.

The underframe is of the builder's standard round bumper type with wide flanged channels and the wheels are cast steel with flexible bearings. The interior of



Interior Reinforcement Is Provided in a Recently Developed Dump Car of the Rocker or Cradle Type to Resist the Wearing Action of the Materials Handled

the sides of the car is provided with a number of flat reinforcing bars which are designed to add to the length of the car's life by resisting the wearing action of the load upon the car body. Stops are provided at either side of the framework upon which the body is supported to prevent it from tipping entirely over when the load is being discharged.

Electric Mill Drives in England

Electric power installed in steel and metal works in England is now well in excess of 300,000 hp., according to a paper read before the Manchester Association of Engineers, England, by L. Rothera. The first electric drive placed on a tin-bar rolling mill, he said, was equipped with a single-lever control for regulating the speed and direction of rotation of the mill motor. This control, he explained, was accomplished by varying both the field current of the variable voltage generator of the motor-generator set and the field current of the mill motor, these currents being supplied by separate exciters. He also said that the torque motor of the slip regulator was operated from a series transformer mounted in the cable connections leading to the motor of the flywheel set and that tappings on this were made to vary the power taken by the motor.

Negotiations are on foot for a combination of the most important companies in the Norwegian iron industry, according to U. S. Vice Consul H. E. Carlson of Christiania. The combination would be of importance not only from the point of view of economics, but also because the industry would be able to stand as a single factor in all deals with foreign countries. It is stated that an effort at standardization will be made.

The Algoma Steel Corporation, Sault Ste. Marie, Ont., has decided to enlarge its by-product coke-oven plant, and a contract for an additional battery of 25 ovens has just been let to the Wilputte Coke Oven Corporation, New York, making 50 new ovens now in process of construction. It is expected that the two new batteries will be ready for operation late this year.

Mining Engineers Expel Enemy Aliens

The Directors of the American Institute of Mining Engineers at a recent meeting unanimously decided to drop all enemy aliens from membership. The meeting was attended by 23 of the 25 directors, among them Chairman W. L. Saunders and four of the personnel of the Naval Consulting Board. The resolution reads:

Resolved, That all honorary members, members, associate and junior members who are enemy aliens, residing in enemy countries, be dropped from membership in the American Institute of Mining Engineers, and their names be, and they are, stricken from the rolls.

Resolved, That the membership committee be requested to advise this board of directors of the names of all the above mentioned persons, and in addition the names of all other enemy aliens, members of the institute; and, be it further

Resolved, That in the case of said latter class this board shall consider and act upon the question of expulsion after ascertaining their attitude toward the Government of the United States.

The action of the Board of Directors, according to Bradley Stoughton, secretary of the institute, immediately affects the status of 21 German scientists and one Austrian professor who held either honorary or active membership in the association. Many of the German members of the institute have been exceedingly active in furthering Germany's war aims through scientific invention or research. Among these are mentioned Prof. B. Draeger of Luebeck, who invented the German gas mask. Before the war he was one of Germany's leading mining engineers and in the course of his work perfected a steel helmet to protect miners from the poisons of the mines. This he modified for the use of soldiers.

Other leaders in German industry or science who are dropped are Prof. L. Edeleanu, a Prussian authority on petroleum; Emil Schroedter of Düsseldorf, secretary of the German Society of Iron and Steel Makers, and Walter Mathesius of Charlottenburg, Germany's great copper expert. Dr. W. Oswald of Coblenz, a leading German chemist, also no longer belongs to the institute.

A thorough census of all members will be taken with a view to ascertaining where they stand in regard to the war. This will take some time, as the institute has a membership of 6597 in this country and more than 1000 abroad.

New Installations of the Stoughton Oil-Burning Cupola

Liquid fuel for cupola is growing in favor, especially since the recent trouble with coke supplies and high sulphur content. In THE IRON AGE, Feb. 25, 1915, and May 13, 1915, articles appeared on the Stoughton oil-burning apparatus for melting iron in cupolas, particularly steel foundries using the converter process. The first installation was at the plant of the Eagan-Rogers Steel & Iron Co., Crum Lynne, Pa., early in 1915, which has been in operation practically ever since, the coke consumption today being only one-seventh of that where coke alone is the fuel.

As the result of the formation of the Stoughton Process Corporation, 71 Broadway, New York, several new installations have been made. The Taylor-Wharton Iron & Steel Co., High Bridge, N. J., now has two in use and the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has one cupola fitted with the apparatus. The Bonney-Floyd Co., Columbus, Ohio, has one in operation and will install another, and the Farrell-Cheek Steel Foundry Co., Sandusky, Ohio, is operating with one. The Singer Mfg. Co., Elizabethport, N. J., has the apparatus in use and the American Reclaiming & Refining Co., Kenilworth, N. J., is building a new plant, which will contain five cupolas, all to be equipped with the Stoughton oil-burning apparatus.

The U. S. Shipping Board announces that the shipwright and joiners' union for Seattle has adopted resolutions waiving Saturday half-holidays and double pay therefor for June, July and August. The Metal Trade Council of Portland, Ore., has taken similar action in voting to waive Saturday half-holidays.

Fabricating Facilities to Be Enlarged

An important move to speed up the output of tonnage in the so-called fabricated shipyards, the American International Shipbuilding Corporation plant at Hog Island, Philadelphia, the Merchants' Shipbuilding Corporation at Bristol, Pa., and the Submarine Boat Corporation yard at Newark Bay, has been taken by the Emergency Fleet Corporation. It was decided to mobilize the resources of the steel fabricating plants east of the Allegheny Mountains to produce from 20 to 30 per cent more steel each month for shipbuilding.

To meet the needs of the assembling plants the Fleet Corporation has entered into a contract with the McClintic-Marshall Co. for additional fabricating plants at Pottstown, Pa., and at Pittsburgh for the sole use of the corporation. The amount involved is about \$5,000,000.

The Hog Island and Bristol yards can take care of all the fabricated material that the McClintic-Marshall plants turn out, even after they are enlarged, but the other shipyards will be supplied if they require additional steel. The placing of the contract with this company will mean large saving in freight and railroad haul.

"It is understood that the steel men are ready to stand by the Fleet Corporation and meet every demand that is made upon them," says the *Emergency Fleet News*. "The output of steel can be increased by 20 to 30 per cent per month without any great burden upon the plants and without material expansion, although it may be necessary, according to one official, to decrease production for private concerns in order to meet the Government needs."

"I want a steady stream of steel flowing into the Government yards," said Director General Schwab. "It would be a waste of energy to have a shipyard fully prepared to produce ships to its maximum capacity but unable to do so because of lack of steel. We must have no further shortages in our new yards at Hog Island, Bristol and Newark Bay. These great plants will be able to produce ships in unheard-of quantities if the material is forthcoming regularly."

"The steel men have shown a splendid spirit of co-operation, and I feel confident that our program will be quickened as a result of these new plants."

Machine Works Taken Over by the Government

The S. B. Harding Machine Works, Light and Marion streets, Oshkosh, Wis., which with other large machine shops in that city has been experiencing labor troubles for several months past, has been taken over by the Government in order to hasten production of materials urgently needed. All effort to adjust the differences between the employer and the union machinists failed. Upon taking over the Harding plant in behalf of the Government, Charles W. Wellons, who has been acting as inspector, sent the following communication to the headquarters of the machinists' union:

"The shop formerly operated by Mr. S. B. Harding at 123 Marion Street, Oshkosh, Wis., has been taken over and will be operated by the United States Government. The shop at present has no connection with Mr. Harding or any differences that may have come between him and members of your organization."

The organized machinists have returned to work at the union scale of wages and on an 8-hr. basis, but actually are working 10 hr., with overtime for the excess.

The strike was declared to enforce a demand for an 8-hr. day, with time and a half for overtime and double time for Sundays and legal holidays; a minimum wage of 45c. an hr. for machinists, 35c. an hr. for specialists and 30c. an hr. for helpers. The first walk-out occurred in December, 1917.

The *Helix* is the name of a little paper which is to be published by the Greenfield Tap & Die Corporation, Greenfield, Mass., for the benefit of its employees. The first number is elaborately illustrated, neatly printed and abounds in news of the plant and of the men of the company who have been called to the colors.

SHIP ENGINES BADLY NEEDED

Charles M. Schwab Tells Boiler Makers Hulls Are Completed But Without Equipment

Director General Charles M. Schwab of the Emergency Fleet Corporation, who addressed the American Boiler Manufacturers' Association at its thirtieth annual convention, Hotel Bellevue-Stratford, Philadelphia, on Tuesday, said that the situation as to engines and boilers for ships is a critical one. Eighty or 90 hulls are in the water now, Mr. Schwab said, waiting for the power equipment. All available manufacturing facilities in the country, he added, will be adapted as quickly as is possible to the supplying of this equipment. There is no question, he continued, that America's great shipbuilding industry will supply the hulls as fast as we need them, but the one thing to which he has been devoting most of his attention recently is the supplying of accessories.

At the war councils held in Washington every Wednesday, every question that is discussed has at the bottom of it the procurement of ships and more ships. Mr. Schwab said that 12½ per cent of our shipping is used for the movement of troops, and 85 to 87½ per cent is required for the movement of supplies. According to Mr. Schwab 250,000 troops were sent to France in May.

Publicity on Shipyard Performance

Mr. Schwab appealed to the boiler manufacturers to realize the great importance of their industry in the shipping program. The Emergency Fleet Corporation places the contracts, he said, but the obligation to fulfill these contracts rests with the people who have taken them. He added that if misfortune should overtake us, the Government and the people would know where to place the responsibility. Mr. Schwab announced that he had appointed Admiral Fletcher as a head of a board of publicity, which will publish broadcast, beginning soon, the relative performance of every shipyard in the United States. By this means the public will be given an opportunity to know which companies best perform their duties.

Industrial Service Medals

The Shipping Board is going to give recognition to people who do unusual service. Gold service medals will be awarded to those who render distinguished service industrially. Mr. Schwab said that the shipbuilding plants of the Pacific Coast and the Great Lakes have set the pace for the rest of the country. Eight of the 10 shipyards which have won first place in shipbuilding speed records are in the Pacific Northwest and two on the Great Lakes. The great yards in the East have not come into action yet, said Mr. Schwab, but "they have got to come into action soon or they will go out of action altogether."

He never expects to see less production in any month than in May, when one 10,000-ton ship was completed for every working day. He said that henceforth he would not count the number of launchings, but would figure only on completed ships.

He said that he had entirely resigned from all affairs of the Bethlehem Steel Co. and that he has not been in its office in two months, nor heard a word about his business in that time. He said that all business men should feel that winning the war is more important than anything else. He added that he was getting as much enjoyment out of his present job as anything he ever did in his life. "I love to do things of this sort," he explained, "when there is a real motive back of it."

He paid a great tribute to A. C. Pessano, head of the Great Lakes Engineering Works, Detroit, who was present with Mr. Schwab at the meeting. He said that when he recently called a conference of the Great Lakes shipbuilders, he told them that he must have a million tons of ships from the Great Lakes within a year, offering to give the Great Lakes shipbuilders the necessary money or anything else they might need. Mr. Pessano patriotically responded that his plant was at the disposal of the Government and he left it to Mr.

Schwab to fix the conditions. This contract, said Mr. Schwab, involved \$200,000,000.

Mr. Schwab's final word to the boiler manufacturers was: "We need boilers. Just discard everything else and give us boilers and more boilers. Profits don't cut much figure, because the Government may take all you earn, anyway."

A. S. M. E. Boiler Code

On the opening day of the convention there was an extended discussion of the adoption of the American Society of Mechanical Engineers' boiler code in various States. Substantial progress was reported by Charles E. Gorton, chairman of the American Uniform Boiler Law Society, toward uniform boiler laws in all States. C. O. Meyer, chief deputy boiler inspector of Ohio, said the A. S. M. E. code has not worked satisfactorily in Ohio because it contains no provision covering track locomotives, and he said that in all probability the State would return to the Ohio standard code.

Speakers at the convention included Col. F. N. Gunby of the United States Army, Quartermaster's Department, who told of the work of constructing cantonments and presented lantern slides and moving pictures; D. M. Medcalf, chief inspector of steam boilers, Toronto, Ont., who told what Canada is doing in the war; William H. Barr, president National Founders' Association, who discussed the labor situation in his usual unmincing manner; Dr. D. S. Jacobus, Babcock & Wilcox Co.; Dr. E. J. Cattell, city statistician of Philadelphia, and others. Reports of several committees were heard, covering such subjects as uniform costs, uniform contracts, uniform specifications, etc.

Federal Mediation in General Electric Co. Labor Troubles

WASHINGTON, June 18.—The National War Labor Board announces that in order to prevent a threatened strike of 20,000 employees of the General Electric Co. at Schenectady, N. Y., former President William H. Taft and Frank P. Walsh, joint chairmen of the National War Labor Board, have agreed to take up the case with a view of adjusting the controversy. The men demand increased pay and a shorter working day. Recognition of the union is not an issue. The men had voted to strike, but upon the request of conciliators of the Department of Labor reconsidered this action and agreed to remain at work on the condition that the War Labor Board would assume jurisdiction. Officials of the company have indicated their willingness to place the case in the hands of Mr. Taft and Mr. Walsh. Investigators have been sent to Schenectady preliminary to a hearing by the two chairmen.

At the same time a section of the War Labor Board composed of Fred C. Hood and Adam Wilkinson, representing capital and labor respectively, are endeavoring to settle a controversy between the General Electric Co. and its 7000 employees at Pittsfield, Mass. This controversy is one of the most difficult of mediation that has come before the War Labor Board and on several occasions during the negotiations being conducted by Messrs. Hood and Wilkinson the men have threatened to strike in protest against the attitude of the company. They have been persuaded to remain at work, however, and the prospect of a definite settlement is good. The issues in this case are wages and an effort to have the company agree to deal with committees representing the men. The men seek to have abolished the company's practice of making individual contracts with its employees.

Tractor is the name of a new monthly publication issued by the Tractor Publishing Co., Mercantile Library Building, Cincinnati. The paper will be devoted entirely to the tractor industry and its first number contains articles from manufacturers of farm tractors and also one from Governor James M. Cox of Ohio, on Ohio's Co-operators' Tractor Campaign. W. G. Welborne is editor-in-chief and Thomas G. Wither- spoon is general manager.

Planning for 10,000,000 Tons of Ships in 1919

Director-General Schwab Favors Immediate Extension of Old Shipyards to Provide 50 Ways—Engine and Boiler Capacity Needed

WASHINGTON, June 18.—The plans of the Emergency Fleet Corporation to reach an output of 10,000,000 deadweight tons of merchant shipping in 1919 are set forth in interesting detail by Director-General Schwab at a hearing before the House Committee on Appropriations, a verbatim report of which has been made public here coincidentally with the reporting to the House of the annual sundry civil appropriation bill, which carries for shipbuilding \$1,761,701,000 and an authorization subject to future appropriations of \$945,549,000 additional, or a total expenditure during the coming fiscal year of \$2,707,250,000. Mr. Schwab's statement includes a warning to manufacturers of engines, boilers, and other accessories and equipment that every effort must be made by them to increase their output if the shipbuilding program is not to be held up on their account.

Old Shipyards Loaded Up

Mr. Schwab began his statement with a brief review of what has been done in fitting up yards for the construction of steel ships. "I think there is a very great misconception," said he, "as to the work that has been done. There were some very good—indeed, some very large—shipyards in this country that had a very great capacity, comparatively great, but more than half of their capacity was immediately preempted by the Navy, making it impossible for them to be applied in whole to the ships required by this corporation. For example, the Bethlehem Shipbuilding Corporation has five large shipyards and some 60 per cent of their entire capacity was taken by the Navy before Mr. Hurley could get a chance to use them. Thus the greater number of ships required by the Fleet Corporation had to come from yards which had to be organized and constructed. And before these yards can become effective as operating yards there must be a reservoir of supply—I mean of steel and all accessories that go into a ship.

"The work, to my mind, has been most effectively done. I have never seen better yards or better equipped yards than the yards which have been constructed for this purpose. It has been humanly impossible, as I see it, to make these yards quickly productive; but when once started they are going to satisfy, in my opinion, all the things that are demanded of them. My one criticism, and the thing I have urged upon Mr. Hurley very strongly, is that if we understand the requirements for ships as Mr. Piez has obtained them from the Army and the other departments, we have not provided nearly enough facilities to meet them, and I have urged him within the past week or two to allow me to proceed to enlarge and supply facilities necessary to meet the requirements which I think we are going to face. For example, I think that next year we ought to produce somewhere between 8,000,000 and 10,000,000 tons of ships, or even more than that."

Boiler and Engine Building Plants Needed

"By facilities do you mean primarily shipyards," asked Chairman Sherley.

"No," replied Mr. Schwab. "I mean everything connected with them. For example, I think we do not need to expand nearly as much in the construction of new shipways as we do in engine building, boiler building, and the other accessories of ships and perhaps even in the manufacture of steel plates. I think that the present yards and other facilities, if working smoothly, will produce 6,000,000 or 7,000,000 tons next year, but I think we ought to have at least 10,000,000 tons of steel ships.

"The thing I strongly urge is that the so-called old

shipyards, which have heavy organizations and heavily trained forces ought to be extended wherever it is possible to take care of this additional tonnage. Now, when I say 'extended' I mean extended in every way. I mean extended in the building of engines, boilers, and all the accessories of ships, which is just as important as the building of the hulls of ships, if not more. I do not know where we will get enough capacity to extend the yards so as to come up to the required tonnage for next year, but I believe it is possible. We should not lose one day in getting started.

"I think they ought to be financed under the same plan that you have had heretofore; that is, we making the extensions and the yards taking them over at the end of the war on some appraised value. I think that is as good a method of financing it as could be had. For example, additional boiler works and engine works would not be anything that private capital could afford to go into. I can not conceive of any better plan than that which has been adopted. It has been economical and contracts have been on a close basis as compared with the Navy contracts, for example, and the experience in England and France. I have done personally a great deal of work for those countries during the war, and their method of financing was infinitely more liberal than this."

"We now have 72 yards with 400 shipways," said Chairman Sherley. "What does your plan contemplate?"

"Fifty additional ways," replied Mr. Schwab, "but our chief expenditure would be in the way of engines, accessories, etc. With those additional facilities we could get more ships per way in the existing yards for I think the choke is likely to come in other things than hulls."

No More Steel Capacity Needed

"Does your estimate of \$150,000,000 contemplate the expenditure of any sum for the purpose of increasing the supply of steel plates?" asked the chairman.

"I have had an interview with the Director of Steel Supply on this subject," replied Mr. Schwab, "and he tells me that with the expansion of the steel business that will become available this year, he believes the requirements of our larger program can be fulfilled without any expenditure in that direction. The transportation question is important, of course, for if we can get transportation and fuel there is no question but that the steel companies can give us all the steel we require."

At this point Mr. Piez, who was present at the hearing, stated that the steel producers have guaranteed the Fleet Corporation a steady supply of 115,000 tons per week of plates if they are not restricted by transportation or fuel difficulties.

"We will get enough steel if conditions are normal," said Mr. Schwab very positively, "and there is no use enlarging the steel mills."

"Your estimate looks to the building of over 2,000 ships before the end of the calendar year 1919?" asked Mr. Sherley.

"It does. I think that those ships ought to move off the ways at the rate of one every three months. That means that you will be fabricating for two ships back of the one that is starting on the ways, which also means that the engines, boilers, plates, punching work, etc., will be started six months before you put the ship on the ways."

The Labor Factor

"Have you made any rough estimate of what it is going to cost per ton of ships to do this work?"

"It depends entirely upon the labor situation. If

labor is advanced then the raw materials that go into the ships must be advanced with it. Steel plates will cost more. We cannot advance wages in one line without having it reflected in all others. That makes it almost impossible to say what the cost would be, for we do not know what the labor conditions will be. As to labor I would say that the plan in my own industries with reference to the encouragement of labor has been somewhat different from that followed in enterprises of this sort. We hoped that we might in some way introduce it. The plan which we have been following in the past introduces as a factor in the contract the allowing to the firms taking the contracts a certain percentage if their costs go below a certain fixed figure. In that way only do I think that the best efficiency can be obtained."

"These contracts were predicated upon a definite figure subject to variations in the cost of material and labor, with a provision that if they fall below the fixed price the difference is divisible into three parts, one going to the firm, one to the labor and one to the credit of the Government," said the chairman. "Do you approve that plan?"

"I do; but I do not quite see how it is going to be practicable to carry out any division of the third part of the saving to labor with any justice. My own idea is that some arrangement should be made by which a part of the third if earned might be applied to the people who manage the concern and to such labor of a leading character as they might desire to include. As a matter of fact, however, nowadays labor changes at least 100 per cent a year and the men who work on a ship when its price is being earned would probably not be in the employ of the yard when the money was ready to be distributed. But I regard it very important to interest in some manner the sub-management on the job."

More Engine Capacity

"Have you made a survey of the country's capacity in the way of boilers, engines and shafting?" asked the chairman.

"We have. That capacity will have to be enlarged. There is a fair outlook for boilers, for which there is a very good capacity, but the facilities for producing engines will certainly have to be enlarged, especially turbines and accessories."

"What is your general opinion of the fabricated shipyards?"

"The first yard that I visited was that of the Submarine Boat Co. which was about 80 per cent completed at the time I was there. I never saw any work better constructed or better planned or laid out on a more economical basis than that yard. They have steel down to the keel for 28 ships and for the purpose of the yard I cannot imagine anything more efficient than what has been done. I cannot say whether the costs were high or low, for I have not yet examined them, but so far as the yard itself is concerned, the general layout, the purpose for which it was planned and the assembling of steel fabricated at a number of places, it could not be better. What I say of one yard I can say of all three, for they are alike."

"What did you find at the Hog Island yard?"

"Just the same condition, though not so far advanced in construction and perhaps a little larger than I would have made it. I liked the Submarine Boat Company's yard a little better because of the size, which does not make such a large area for supervision, but as far as the plant is concerned and the plans for handling material I think they are very, very good. I was most agreeably surprised with the thoroughness with which the work was being done and the broad manner in which the plant had been laid down."

Chairman Hurley of the shipping board has addressed a letter to Chairman Alexander of the House Merchant Marine Committee urging legislation forbidding the building of new shipbuilding plants or the extension of old ones except under Government license. The board desires to prevent speculation in shipbuilding and to stabilize the supply of labor and the mar-

ket for materials. It is also desired to obtain greater control over the acceptance of contracts by domestic yards for foreign account.

W. L. C.

Organization of Emergency Fleet Corporation

The Emergency Fleet Corporation is now located in its new home, 140 North Broad Street, Philadelphia, where about 2000 employees are devoting their time to the administrative and construction departments of the country's great shipbuilding enterprise. The Emergency Fleet Corporation now has supervision over about 150 shipyards, four of which are "agency plants" under the direct control of the corporation as follows: American International Shipbuilding Corporation plant at Hog Island, Pa.; Submarine Boat Corporation at Newark Bay, N. J.; Merchant Shipbuilding Corporation plant at Bristol, Pa.; Carolina Shipbuilding Corporation plant at Wilmington, N. C.

The following is a partial list of the organization:

Officers

Director-general, Charles M. Schwab.
Vice-president in charge of administration, Howard Coonley.
Vice-president in charge of construction, Charles Piez.
Treasurer, George T. Smith.
Secretary, Stephen Bourne.

Construction

Vice-president in charge, Charles Piez.
Executive head, analysis and review of requirements for ships and ship material, George M. Brill.
Director of development of housing and passenger transportation facilities, A. Merritt Taylor.
Assistant director of shipyard passenger transportation, Garrett T. Seely.
Assistant director for housing, J. Rogers Flannery.
Director industrial relations, L. C. Marshall.
Executive head, promoting safety engineering in plants, H. A. Schultz.
Executive head, education and training section, Louis E. Reber.
Director, health and sanitation section, Lieut.-Col. Phillip S. Doane.
Executive head, labor section, investigation of causes of employment and wage disputes, William Blackman.
Executive head, industrial service section, occupational draft deferments and transfers; employment management, Meyer Bloomfield.
Executive head, national service section, stimulation in the ideals and responsibilities of American citizenship, Charles A. Eaton.
Director plant protection section, Maj. James A. Blair, Jr., N. A.
Manager production division, follows production on machinery and equipment purchased direct by the Emergency Fleet Corporation; on request, follows production of material ordered direct by shipbuilders, M. C. Tuttle.
General purchasing officer, F. A. Browne.
Manager shipyard plants division, supervision of construction and maintenance of shipyard plants, Admiral H. H. Rousseau.
Manager transportation division, routing of shipments; tariffs, rates, claims, shipping bills, F. C. Joubert.
Manager, steel ship production division, supervision of steel ship production; aids in management; development of management methods, Daniel B. Cox.
Manager wood ship production division (including composite and concrete ships), James O. Heyworth.

Administration

Vice-president in charge, Howard Coonley.
General auditor, Gordon Wilson.
Manager contract division, M. D. Ferris.
Comptroller finance division, credits, insurance, property accountability, D. H. Bender.
Personnel officer, review of applications, placements, J. M. Goodell.

A voluntary association for fire prevention and fire protection supported entirely by tenants of a multiple-occupancy industrial plant has been organized by concerns leasing quarters in the Racine Industrial Plant, formerly the main plant of the Racine-Sattley Co., maker of vehicles, Racine, Wis. The group occupies several square blocks at Racine Junction and is divided among more than forty concerns, many of them engaged in metal working industries. The new association will employ a paid inspector to have complete charge of all fire prevention and fire protection features. Already the owners of the buildings are replacing 5000 unapproved sprinkler heads with approved devices and will install 33 approved fire doors on 18 openings in division fire walls.

CORRESPONDENCE

The War and Engineering Colleges

To the Editor: If democracy is to be preserved our universities must produce a larger supply of trained men who can think and act. We need them now. We shall need them even more when the war is over. "Service" must in a new and enlarged sense be the keynote of education.

How long will it take America to realize and act upon this fact? It took our allies three years! Scientifically trained men went to the trenches until the higher institutions were decimated. As scientific demands increased, the number of men who could meet these demands decreased. Strenuous efforts are now being made to increase the supply of these trained men. Therefore, even though this may mean many men staying at home, it is not unpatriotic.

The special need for engineers in war times is well known. Approximately 6 per cent of the total force of a modern army is composed of engineers. They are needed in the industries at home even in larger proportion. Yet America graduated only 4306 engineers in 1916, and of these only 1236 were civil, 1164 mechanical, 1098 electrical, 340 chemical and 267 mining engineers. Shall the supply be still further limited?

It is interesting to note that many of our colleges are grasping the situation before it is too late. The annual report of the Association of Alumni of Columbia University, a characteristic example, gives this wise advice:

"It must not be assumed for a moment that the true and necessary functions of the university are displaced in time of war, but rather are they more heavily emphasized, for to-day educational institutions must be prepared to assume a still larger share of responsibilities. Battles must be fought behind the lines as well as at the front, and the responsibilities and opportunities for those to whom advanced education is possible never have been so clearly indicated as to-day. Were the war to terminate in six months, the need of men qualified to repair the vast and universal destruction of four years would require more than the entire output of the institutions of learning of the world. Should the struggle continue for years, the necessity for youth, trained to think rather than to talk, to obey rather than to argue, and faithfully to serve until their capacity to lead has been demonstrated, can best be met by instruction from our colleges."

This is the keynote of the whole discussion—responsibility and preparation for larger service in the years to come. No group will be called upon for more important service than the engineers! England is already seeking to rehabilitate her educational and particularly her technical and scientific institutions. She has recently appropriated \$25,000,000 for this very purpose. France has called for 10,000 of our skilled engineers, not to mention thousands of trained forestry experts. Our own army and navy and great industries need far more than we can turn out. And the rebuilding in all nations after the war is still ahead. No one can foresee how great this will be. Russia is being made over. China is coming to larger life. The pulse of our South American neighbors has been quickened.

Let us have more education in engineering. Make it the right kind. Have the curriculum include something besides technique. Give a large place to the human side. War demands officers and engineers who can handle men as well as materials. Let us train engineers who can understand the other fellow's point of view. There should be more lectures, discussions, inspection trips, etc. More colleges should follow the Y. M. C. A. plan of sending their students out to teach English and citizenship to foreigners, to instruct American workers in technical subjects, to get closer to the labor unions, to lead clubs of apprentices, etc. The day of the workman is coming. Many foreigners in our midst are no longer "immigrants" but "allies." Our

college men had best begin right now to learn international brotherhood.

In short, more men must go to college especially for engineering and business courses. More men must remain in college to complete their courses. More men must be aided by the Government if necessary to take the kind of courses which will prepare them for the largest service. Our engineering schools must train more men and bigger and better men, equipped not only for engineering but for international relationships and a larger life.

FRED H. RINDGE, JR.

Secretary, Y. M. C. A. Industrial Department,
New York City.

After-War Effects of Slowing Down Production

To the Editor: The House of Representatives having run true to form in prohibiting time studies and bonuses in Government manufacturing plants, we listen in vain for any protest from organized labor. There is not even a whisper that its patriotism will not permit of being a party to a measure which applies the brakes to production at such a crucial moment. Perhaps it is just as well that such things come to pass so that we may correctly appraise not only the utterances of the labor leaders but also certain passages in the *Congressional Record*.

There is, however, another effect of this pernicious legislation which reaches beyond the period of the war. At the present time there are thousands of employees in the Government plants who, when peace returns, will not be required. These men will return to employment with private concerns.

How will these men contribute to securing and maintaining a dominant position in the world's trade? Thoroughly inoculated with the principle of slowing down production, who can measure the handicap they will be to their employer? And those employers will be in competition with the manufacturers of England, France and other countries which are even now adopting the very economies and efficient methods which our legislators seek to stifle.

Let labor reflect that with a limited world market there goes hand in hand a curtailed demand for workmen.

H. D. MURPHY.

JERSEY CITY, N. J., June 16.

Direct Combustion of Steel Drillings in Air

To the Editor: The convenience and facility with which steel drillings can be accurately decarbonized in a slow current of air is, it would seem, not generally appreciated. Many text-books affirm that exceedingly high temperatures are indispensable, together with what is then a necessary consequence, platinum boats. Others cast a shadow of doubt on the reliability of the whole operation. The fact that the writer had, during an extended period of time, an opportunity of observing the determination of carbon in practically all classes of steel by this method, may be sufficient to justify the following comments.

While employing the usual combustion process—ignition at about 960 deg. C. in a stream of oxygen—it was found that, by raising the temperature of the furnace 100 deg. C. complete decarbonization in air alone could be secured. Equally good results were obtained with both gas and electric furnaces. A small garage pump, operating on a 110-volt line, which supplied a blast to the gas furnaces, also furnished, in the course of a few minutes pumping into a tank, enough compressed air for several days working.

The drillings submitted for analysis were placed in the popular clay combustion boats. Electro-silica tubes were found best for the work. The furnaces were always heated to 1060 deg. C. before the boats were slipped into the tube, and were kept constantly between that temperature and 1080 deg. C. Experience proved that no elaborate train was necessary. Before entering the tube, the air was purified in a high-form Drexell

gas-washing bottle, containing 250 cc of a strong solution of potassium hydrate. The gaseous products of the combustion were passed through one small empty bubble-tube, to retain any drops of moisture; one U-tube filled with dry calcium chloride; a similar tube holding granulated zinc metal, and one U-tube containing 10-mesh soda-lime, this latter constituting the weighing apparatus. A small bubble-tube partly filled with caustic potash solution served as a guard. For 15 minutes in each case, ignition was continued, with a moderately slow current of air passing. Standard samples yielded their full percentage of carbon under this treatment.

The use of air as detailed above offers several advantages over the similar employment of oxygen. The expense of the gas is practically nil. When once the flow of air has been properly adjusted, no further regulation is needed; whereas, with oxygen, it is necessary to manipulate the key of the tank for the first five minutes of combustion, at least. This point is quite important, where time is valuable; as when a set of six or eight furnaces are operated by one person, the extra five minutes allowed by the use of air is a serious consideration.

Many steels, when burned in oxygen, cannot be afterwards detached from the boat and, on the next time of heating, frequently cut right through the latter. This hardly ever occurs with air. The writer has seen clay boats used as many as 40 times before being discarded.

C. P. LAISTER.

POUGHKEEPSIE, N. Y.

Help on Apprentice Education Wanted

To the Editor: Devoting myself to the question of apprenticeship, I solicit, prior to establishing a definite program, replies from firms in France, England and America who are willing to help me.

Calculating per annum of apprenticeship 300 working days at 10 hr. each, making 3000 hr. yearly, how should these 3000 hr., in your opinion, be divided; that is, how many hours to the technique of the trade, how many to general knowledge, such as the things he has learned but forgotten (reading, writing, narration, arithmetic), and how many to the workshop?

The problem is not to seek how the complete instruction of the apprentices may be realized under the conditions, but to determine theoretically the number of hours to be granted to each of the three divisions mentioned.

Please address your reply to "Chambre de Metiers de la Gironde, 48 Cours Tourny, Bordeaux, France.

MAUVEZIN,

BOPDEAUX, May 7.

Director

Government Acquiring Neville Island

Condemnation proceedings have been instituted by the United States Government to secure 15 pieces of property on Neville Island, in the Pittsburgh district, which are wanted for the new ordnance plant to be built there. Of the defendants two are industrial concerns and 13 are individuals, mostly farmers. Since the announcement that the Government proposed to take the island, prices are said to have almost trebled and the Government agents and the property owners were unable to come to an agreement. The Real Estate Board of Pittsburgh, at the request of the Federal authorities and the officers of the United States Steel Corporation, has appraised practically the entire island and the prices fixed upon as reasonable are much below those which property owners ask. The necessary petition was filed in the United States District Court at Pittsburgh last week.

The plant at Toledo, Ohio, of the Doehler Die-Casting Co., Brooklyn, N. Y., completed about a year ago, has proved inadequate and the company has taken over the adjoining plant of the Ohio Electric Co., doubling the present capacity at Toledo. The plant's activities are devoted largely to Government, but the regular trade is not being neglected.

British Steel Exports Continue Small

British steel exports and imports continue at a low rate, according to official returns. For February, 1918, total iron and steel exports, excluding iron ore and including scrap, were only 134,500 gross tons, as compared with 139,151 tons in January and with a monthly average in 1917 of 195,466 tons. The 1915 average was 270,670 tons per month.

Pig-iron exports in February were 34,913 tons, against 40,503 tons in January. The average in 1917 was 53,278 tons per month. Ferroalloy exports, mostly ferromanganese, were 5505 tons last February as compared with 3905 tons in January. The monthly average in 1917 was 7869 tons.

Rail exports in February were 4078 tons, against 2286 tons in January; they averaged 3265 tons per month in 1917. The steel bar movement was 12,110 tons in February, as against 24,109 tons in January and a monthly average in 1917 of 35,703 tons. In 1913 the rate was 41,208 tons per month.

Imports of iron and steel, excluding ore and including scrap, were only 21,434 gross tons. This compares with 28,019 tons in January, and with a monthly average in 1917 of 41,401 tons. In 1915 this average was 107,550 tons. It is evident that imports of the British Government are omitted from the statement, and these are considerable.

Imports of steel blooms, billets and slabs last February were only 1639 tons, apart from those which are not reported, while in the same month a year ago imports of semi-finished steel were 4603 tons, and the 1917 average was 4942 tons per month. In 1915 these imports were reported as averaging 35,666 tons per month.

Imports of spiegeleisen, ferromanganese and ferro-silicon, most of these being probably 50 per cent ferro-silicon from Canada, were 701 tons in February, as compared with 1645 tons in January. In 1917 these imports averaged 1137 tons per month.

For a \$100,000,000 Aircraft Corporation

WASHINGTON, June 18.—Director of Aircraft Production John D. Ryan has decided to form a \$100,000,000 corporation as a means of applying up-to-date business methods "to facilitate and expedite the production of aircraft, aircraft equipment or materials therefor." After a careful review of what has thus far been accomplished in the development of the aviation program of the United States, Mr. Ryan has reached the conclusion that lack of co-ordination is the basic fault responsible for the slow progress made. There have been too many independent authorities in charge of different branches of the work and too little team play. Mr. Ryan has been much impressed with what the Shipping Board has been able to do since it was reorganized with Mr. Hurley and Mr. Piez in charge of the executive work at Washington and Director General Schwab pushing construction in the shipyards and proposes to handle the aircraft problem in much the same way. To carry out this project Senator Chamberlain, chairman of the Senate Committee on Military Affairs, has introduced a bill authorizing the director of aircraft production to form one or more corporations which shall be authorized not only to purchase and manufacture aircraft and all materials and equipment therefor but also to build, own and operate railroads in connection with the work. It is surmised that the railroads would be constructed in the lumber regions for getting out spruce. The total capital stock of the corporation or corporations so formed, together with any bonds, notes, debentures or other securities issued by them, would not at any one time exceed \$100,000,000.

The new tandem plate mill built for the Youngstown Sheet & Tube Co., Youngstown, Ohio, by the Mesta Machine Co., Pittsburgh, was turned over last week and put in regular operation on Monday, June 17. When in full operation it will turn out about 10,000 tons of sheared plates per month, rolling up to 88-in. wide.

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THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, *Advertising Manager*

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Help in Getting War Work

If there must be a sharp curtailment of non-essential activities, it were well that it be hastened. This is not only because it is a necessary war-winning measure but because the caution until recently exercised in circles of authority has thrown up an atmosphere of uncertainty which delays adjustment. Naturally the going establishment is loath to close its doors if the condition so far as can be learned is temporary or exaggerated. Nor, with only caution signals showing, is it likely to put on full steam in the chase for an elusive war contract with all that this may mean in a revolution of shop equipment, system and organization.

In metal-working lines the shop with relatively light machinery will find it difficult to get the direct contracts and must seek sub-contracts. Agencies are being established to help in this work. The American Society of Mechanical Engineers has appointed a committee to bring the contractor and the would-be sub-contractor together. Similarly the Chamber of Commerce of the United States is planning to help through its member organizations. Doubtless these two association efforts will be joined.

The prohibition against new war enterprises in the barred zone of the East (prohibited except under special permit), should not prevent subcontracting in the same zone, for transportation is not affected to a material extent. In the matter of skilled labor the war material contractor need have little more concern than in the matter of getting his material, for the United States Employment Service engages to get it, if it does not even plan to penalize the manufacturer bidding in the open labor market against other war manufacturers. The time has apparently arrived for the manufacturer to trim his sails according to the amount of Government business he can handle.

Foundry firms in the Central West and the Chicago district, which have contracts for castings required in essentials, but not in sufficient volume to pay their overhead, are greatly concerned over the possibility of their supply of pig iron for non-essential work being denied. Without it, they assert, they can operate only at a loss. The answer un-

questionably lies in the operation of the licensing system just promulgated by the War Industries Board. The pronouncement of the board, which sets forth that all deliveries of iron and steel must be subject to Government approval, leaves several wide fields aside from munitions manufacture that are entitled to iron, and the founders may find less basis for their fears than at first seemed justified, especially if they take on business from those lines which the Government does not intend to restrict any more than is necessary. These include food and collateral industries, the clothing industry, transportation, public utilities and mining operations.

Dilemma of Machinery Jobbers

In the course of many years of service to the metal-working industries, the machinery jobbers and agents have grown into an important place in the scheme of production. They have built up organizations that have not only supplied machine tools and other equipment but also, out of their broad knowledge and accumulated experience, have helped manufacturers to solve production problems. They have offered the small makers of machines and tools who could not afford a country-wide sales organization a means for distribution of their products.

Now they find themselves approaching a condition where they will have little or nothing to sell. They face the prospect of having the good-will value of years of service in some measure taken from them, of watching the disintegration of organizations carefully built, of having nothing in their warehouses to sell. One after another the manufacturers whom they represent are instructing them to accept no orders upon which a priority order has not been issued. There can be no priorities upon an order for stock. Hence the dilemma of the jobbers.

If it were true that a priority order meant immediate delivery the producer who requires additional equipment would be protected. But even with class A priorities, it usually takes months to secure delivery of machine tools. This wait means that the peak of production cannot be reached until that waiting period is ended.

Priorities work out quite well when a manufacturer is purchasing an entire line of equipment to

undertake a new form of production or to equip a new plant. It is the going factory whose equipment is out of balance that will most miss the services of the jobber. The manufacturer who finds that he needs an automatic screw machine, a power press or a milling machine to secure full production looks to the machinery jobber to furnish the needed tool promptly; he can ill afford to wait for factory delivery.

The circle of difficulties seems unbroken. The manufacturer of equipment is in many cases already overloaded with priority orders and cannot accept an order for stock; the jobber, lacking stock, cannot perform his usual function; the maker of essential products cannot secure prompt delivery of the machine he needs. Because of this chain of circumstances production drops. The solution of the problem is not easy. A suggested remedy is that the jobber be given priority for his minimum requirements on condition that he sell only to manufacturers of essential war products. But virtually all reputable machinery jobbers are enforcing this requirement now.

Defiance of the Labor Status Quo

Were proof wanted of the determination of certain labor leaders to spread their propaganda and strengthen their hold on the workers in many trades, even at the cost of halting the manufacture of war munitions, it is presented in what is termed by its projectors the Labor Forward Campaign, the conception of which is clearly in violation of the promised status quo in relations between employers and employees during the war. It will be recalled that such an agreement was reached long ago between the Government and the head of the American Federation of Labor, although since it was promised that organized labor would not use war conditions as a club to increase its might, strikes, threats of strikes and agitation have been so prevalent that the promise might as well not have been given. More serious than the strikes, where the simple question of wages is involved, is the agitation to spread and cement trade union organization. It makes the holding of the status quo a sadly one-sided affair.

From a printed pamphlet circulated in Buffalo, N. Y., purporting to be a report prepared by a committee of the Buffalo Central Labor Council, the following extracts are made:

The object of the campaign shall be to organize new unions of crafts and callings in which are engaged male and female wage-earners who are desirous of improving their industrial and working conditions of employment through their mutual effort, and the increase of wages and curtailment of their hours of labor; to assist and co-operate with them in their effort to obtain the consideration of their employers.

To assist during the life of this campaign, all local unions to increase their memberships and extend the influence of their organizations by holding open and special meetings; furnish speakers for such occasions who will appeal to the members to take a more active interest in the affairs of their local union and explain to the non-members of any craft the benefits which are derived from a membership in a union. * * * * *

And to urge and demand a more strict compliance in the hiring and employment of workmen, who are

members in good standing or who hold a card or permit from the authorized officials in their respective trade organizations.

Local unions should take a more active interest in the affairs and conduct of the Central Labor Council by having their quota of delegates attend the meetings and to contribute their share toward making that body all powerful so that it may be able at all times to respond to the call of any and all affiliated local unions in distress or in need of assistance, financially, morally, legally and industrially.

All this is disseminated at a time when the very life of the nation is at stake and when maximum production is a positive patriotic duty.

It is the apparent view of the leaders of labor that now is their golden opportunity to entrench themselves thoroughly—a time when factories are filling up with war work and when manufacturers are falling in line with the Government's suggestion that they adhere to their pre-war attitude with regard to the open or closed shop. At the same time there has been altogether too much official encouragement of the seeming view that one of the by-products of the war must be the making of a very secure place in industry for militant unionism.

Greater Freight Performance

With additional statistics just made available, a more comprehensive comparison can be made of the freight performance of railroads, both long range comparisons over a period of years and a comparison of the recovery in freight movement in March as compared with the showing of January and February.

The latest statistics cover only Class I roads, those having annual revenue of over \$1,000,000, Class II, with revenue between \$100,000 and \$1,000,000 being excluded, also, of course, Class III, with still smaller revenue. The following table shows the freight ton-mileage of Class I roads for the past three calendar years, and estimated annual rates in the first three months of this year, computed by taking the ton-miles reported for each month, dividing by the number of days in the month, multiplying by 365, and allowing for a small percentage of roads not reporting.

Calendar Year :	Ton Miles Per Annum
1915	298,184,700,418
1916	357,670,566,671
1917	389,168,754,904
Month in 1918 :	
January	293,000,000,000
February	350,000,000,000
March	410,000,000,000

The ton-mileage of all roads, including what are now Classes II and III, which carry something like 3 per cent of the total ton-milage, was 186,463,109,510 in the fiscal year 1905, this rising to 255,016,910,451 in 1910. The ton-mileage of Classes I and II was 301,398,752,108 in the fiscal year 1913, this being probably the best fiscal or calendar year before the war. For the fiscal year 1914 the amount was only 288,319,890,210.

There has been overmuch loose talk about the railroads in recent years, centering upon the amount of revenue they have been permitted by the Interstate Commerce Commission to collect. On

the one hand it is true that the railroads have not been allowed to expand as it would be for the good of the country for them to do. On the other hand, it is not true that their public service has not greatly increased. It is by reason of their being able to get more and more traffic movement out of the facilities, that they have been able to make both ends meet at all. The public has really received a great deal more traffic service. It will be recalled that there was great railroad expansion, particularly in rolling stock, in 1905, 1906 and 1907. The best fiscal year for freight traffic was that ended June 30, 1907, which was also the greatest fiscal or calendar year of industrial activity until several years later. In the fiscal year 1907 the freight ton-mileage of all roads was 236,601,390,103. Afterwards the best year before the war was the fiscal year 1913, with 301,398,752,108 ton-miles. Thus in six years, from one good industrial period to the next, there was an increase in freight movement of more than 27 per cent. This presumably was due to the railroads getting a good start through their improvements in 1905-6-7. While the figures show 27 per cent, the actual increase was greater, because for 1913 Class III roads are excluded.

With their extremely limited facilities, from the viewpoint of the small railroad expansion after 1907, the roads made a further and large increase in operations in 1916 and 1917. The calendar year 1917 shows 389 billion ton-miles for Class I roads, against 301 billion for Classes I and II in the fiscal year 1913 and 237 billion in the fiscal year 1907, for all roads. Making allowance for the difference in the character of the reports, there was an increase of fully two-thirds in the freight movement in ten and one-half years. Over a period of many years, up to about 1907, there had been a doubling in freight ton-mileage about once every dozen years.

As to the short-range comparison, which can be made precisely from the figures first cited, referring only to Class I roads, there was a movement of 389 billion ton-miles in 1917, this being a remarkably heavy movement, while in January the rate dropped to 293 billion. That was a falling off of one-fourth, which was very bad, but it was not as great a decrease as appeared from some viewpoints. The railroads had not "ceased to function" as was said at the time, from the viewpoint of their not doing anything, of their being absolutely blockaded; but everything industrially was upset, because a failure of transportation to the extent of 10 per cent, not to speak of 25 per cent, must necessarily be a serious matter.

The decrease in efficiency in January was very impressive, but still more impressive was first the improvement in February, to a rate of 350 billion ton-miles a year, and then the increase in March to a 410 billion rate, which was indeed 5 per cent above the average rate in 1917. That there has been a very decided improvement since March goes without saying. One may imagine that the rate by this time has reached 450 billion, or approximately double the best rate shown eleven years ago.

WAR TAXES AND BOND ISSUES

A Steel Manufacturer's Comments on Proposed Federal Tax Legislation

BY WILLIAM B. DICKSON*.

The question of Federal taxation will continue to be a seriously disturbing element in business until we have a Federal tax law so simple and clear in its terms that a business man will be able to calculate with reasonable certainty the amount of burden it will impose upon his business. Business men generally have a growing appreciation of the magnitude of the task which this country has undertaken, and they realize that to carry on this great war in defense of civilization to a successful conclusion, money must be obtained by the Government in amounts which stagger the imagination. The magnitude of the task before us, however, should not prevent clear thinking on this subject, which so fundamentally affects the social fabric.

One of the most serious questions confronting the American people to-day is how to make a fair and at the same time a practical division of this burden of taxation between the present generation and future generations, who will certainly profit enormously by our sacrifices. The forms of taxation which commend themselves to the sense of fairness of the American people are:

1. Income tax, with exemptions so low as to bring the great majority of our citizens within its operation and thus give them a vital interest in Government financing.

2. Excess profits tax based on a clear definition of capital invested and an exemption of a reasonable return on such capital, say 10 per cent, after providing amply for ordinary depreciation, special depreciation of extra hazardous capital investments and investments in plant and equipment the value of which will be impaired by the ending of the war, depletion of mines, etc., and all other proper factors recognized by modern accounting.

Experience has proved that no definition of invested capital can be devised which will not work serious injustice to some form of legitimate enterprise. It is therefore essential that some flexibility should be provided in the law in the form of a permanent tribunal which should have the power to determine the equities in any case which may be brought to its attention by a taxpayer.

In this connection, as corporate accounting is the basis for such a large proportion of the national financing, the Federal Government should require a uniform system of accounting by all corporations. This is so fundamental that it is most surprising that it was not made a part of the original war tax legislation.

In considering the division of the burden between this and future generations, full consideration should be given to the character of the expenditures made and to be made, particularly with a view to discriminating between those which are irretrievable expenses and those which are investments, in whole or in part.

In the first class, of course, belong all expenses incurred in the assembling, equipping and maintaining of the fighting forces; while in the latter class should be included all loans to foreign Governments, secured by their obligations; money advanced on farm loans; advances to manufacturers; and all moneys expended in the building of such permanent improvements as docks, harbors, waterways, railroads, and all other improvements having a permanent value. All of these investment expenditures should, of course, be financed by bond issues.

*Vice-president Midvale Steel & Ordnance Co.

If Mr. McAdoo's suggested division of one-third present taxation and two-thirds bond issues is adopted, these percentages should be applied to the amount which remains after deducting the investment expenditures above mentioned.

In conclusion, as a general proposition, the Government will be justified as far as practicable, in issuing a series of short time certificates of indebtedness and in paying a high rate of interest on such certificates in order to be in position at the end of the war to rearrange the entire financial structure.

The total amount to be financed will then be definitely known and it will be possible to decide intelligently—

(a) What percentage of the total must be refunded by long-term bonds, and the term and interest rate of such bonds;

(b) The form of direct and indirect taxation which can most easily be borne by the business and social fabric under the condition then existing.

The Timken Preparatory School

H. H. Timken, president Timken Roller Bearing Co., Canton, Ohio, has announced plans for a preparatory school at the plant to be used for training operatives. This announcement is almost coincident with the order of Provost Marshal General Crowder calling draftees in non-essential employments into work more directly connected with war production. As the Timken company plant is engaged almost entirely on the manufacture of bearings for automotive vehicles to be used in military service, the Timken school will afford to men changing the character of their occupation a chance to fit themselves quickly for remunerative work, provided they possess aptitude for mechanical employment. The Timken school will be completely equipped with machine tools of the most modern design, identical with those now in use in regular departments of the plant. On these machines the new men will be trained under the care of skilled instructors, and graduated to places in the factory when they have sufficiently proved themselves in the training course. This will insure smooth operation of the regular plant departments, as new men will be fitted to their tasks before becoming a part of the working organization.

This movement by the Timken company was not born solely of war necessity, but is a part of a plan now being worked out for the most effective utilization of available labor resources. It will work a double advantage, giving the employer access to a source of skilled labor and the worker an opportunity to earn good wages from the start. The school will not only enroll from the ranks of men released for war service by the recent selective service order, but will recruit from all men engaged in non-essential trades who are without the draft age but who wish better jobs. Men who come within the classes as outlined may make application to F. T. McKay of the employment department of the Timken Roller Bearing Co., as work in the new plant school may start ahead of the time set for completion of the building.

Steel Supply for Oil and Gas Producers

The oil division of the Fuel Administration at Washington refers to the fact that the action of the War Industries Board in taking over the distribution of the entire steel output of the country for Government and essential requirements has been taken advantage of by brokers and others to charge excessive prices for such supplies as they have on hand. It is pointed out that the action of the War Industries Board in providing for the allocation of iron and steel to essential industries is calculated to increase greatly the supply of essential products, including all kinds of oil well supplies, and that this action should relieve promptly the shortage that has existed in wire rope, tubular goods and boilers.

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Recommends No Change in Scrap Prices

The sub-committee on scrap iron and steel of the American Iron and Steel Institute met on Monday in Philadelphia to discuss prices for third quarter. It was decided to recommend to the Committee on Steel and Steel Products that no changes in base prices be made. The present schedule is declared to be working satisfactorily, with the exception of a few minor points, and changes in the wording of the price recommendations will be suggested to cover these points. One of them relates to low phosphorus scrap unguaranteed and the other to cast iron scrap for foundries. It is asserted that considerable material that should be sold as heavy melting steel has been classified as low phosphorus scrap unguaranteed, thereby bringing a price of \$34 a ton, instead of \$29. Some readjustment will be effected which will bring cast iron scrap for foundries more nearly in line with No. 2 foundry pig iron.

The sub-committee appointed Emory E. Smith of the United States Shipping Board as a member of the committee representing the Pacific Coast. Mr. Smith will work directly with W. Vernon Phillips of Philadelphia, chairman of the sub-committee, in handling scrap matters on the Coast, from which section violations of the price recommendations have recently been reported.

An investigation is being conducted by mail by the sub-committee among consumers of scrap to determine their condition, with respect to supply, as compared with a year ago; also to determine where the need for scrap is greatest. The information received will be utilized by the sub-committee to relieve shortages wherever they may occur.

The Portuguese Government has reserved the sole sale and export of all minerals found in the country that are of value in war industries. The Government will fix the prices at which the minerals affected by the decree will be sold, including wolfram and chromium. All stocks of these minerals at the mines or elsewhere must be declared to the Department of Mines.

Steel Price Conference at Washington

A 25 Per Cent Fuel Order for Pleasure Cars, but Steel Supply May Be More—Iron and Steel Jobbers' Plans for Co-operation

WASHINGTON, June 18.—The Committee on Steel and Steel Products of the American Iron and Steel Institute will confer with the price-fixing committee of the War Industries Board at a special meeting called for 11 o'clock on Friday, June 21, for the purpose of considering the revision of the existing price schedule for iron and steel, which expires by agreement on June 30. The invitation to the committee of the institute to come to Washington on the date mentioned has been extended at the instance of Chairman Baruch and Director of Steel Supply Replogle, who wish to obtain the views of the steel men as to whether changes are desired, and, if so, their character and extent.

No Washington Initiative on Prices

Officials of the War Industries Board say they have formulated no policy and have no preconceived ideas concerning the question whether the existing price schedule shall be continued or modified, and they emphasize the statement that they have reached no conclusions as to whether, if the schedule is to be modified, prices should go up or down. The price-fixing committee, it is stated, will approach the subject with an open mind, and will expect the steel men to take the initiative if any changes are desired. It is understood that while Chairman Brookings will preside at the coming meeting, Mr. Baruch, in his capacity as head of the War Industries Board, is also likely to be present. Mr. Replogle will attend the meeting.

While there have been constantly recurring rumors to the effect that the War Industries Board contemplates some change in the policy of the price-fixing committee with respect to steel along the lines originally suggested by former Chairman Willard looking to the pooling of the entire product and the purchase of steel by the Government at differential rates representing cost of production plus a reasonable profit, there is no indication that this phase of the subject will be seriously considered at the coming meeting. Members of the War Industries Board have expressed the opinion that the prices fixed for the current quarter have been sufficiently high to show a handsome margin of profit for the big, fully integrated concerns, but this point does not appear to be so strongly emphasized as when originally made last winter. The advance in freight rates and the fact that Congress is now planning the most drastic revenue measure ever placed upon the statute books are well understood in the War Industries Board. Moreover, the careful manner in which the Ways and Means Committee is examining the financial statements of the leading corporations of the country in connection with the effort now being made to revise the excess-profits tax law so as to secure every possible dollar of revenue is counted upon to produce a tax schedule that will absorb all gains that in any way can be attributed to the war or to any measure of liberality that may be shown by the price-fixing committee.

The 25 Per Cent Pleasure Car Order

Developments of much importance in the conservation of iron and steel, pursuant to Mr. Replogle's plan as now being carried out by the conservation division of the War Industries Board, have taken place during the past week. At the threshold of this undertaking a sharp controversy has arisen between the Fuel Administration and the War Industries Board with respect to the restrictions to be imposed upon the manufacture

of pleasure automobiles. On June 13, Fuel Administrator Garfield announced that it would not be possible to allow manufacturers of pleasure cars more than 25 per cent of their normal supply of fuel for the year beginning Aug. 1 next. A formal bulletin given out by the Fuel Administration embraced the following additional statement:

Dr. Garfield stated that the general question of curtailing this industry is now in the hands of the steel section of the War Industries Board. The Fuel Administrator, however, feels responsible to limit the amount of fuel used in the manufacture of pleasure automobiles to whatever extent the national situation demands. Fuel Administrator Garfield made it plain even if steel is available for a larger production he will be compelled to limit the fuel for the manufacture of pleasure automobiles in the season 1918-19 to not over 25 per cent of that consumed for this purpose in the season 1917-18.

The enormous increase in the demand for coal in connection with the war has convinced the Fuel Administrator that it would be jeopardizing the vital interests of the country to permit fuel to be used in the manufacture of a larger number of pleasure automobiles than the 25 per cent mentioned above.

This curtailment does not affect the manufacture of trucks or other cars for war use nor the enormous amount of other war material which the automobile companies have already undertaken for the Government.

Steel Supply May Not Be Limited to 25 Per Cent

It will be recalled that Dr. Garfield, in a statement made on June 10 declared that the Fuel Administration was co-ordinating its work of curtailing fuel supplies with that of the War Industries Board in the treatment of steel, and that as the result of an understanding already reached the bureau making the heavier curtailment would in all cases govern the other; that is to say, if the Fuel Administrator should decide that but 25 per cent of the normal supply of coal could be furnished to any given industry, the War Industries Board would cut the steel supply of that industry to the same figure, notwithstanding the fact that it might be practicable from the steel standpoint alone to treat the industry more liberally. Recent developments indicate that the officials of the War Industries Board have not accepted the plan described by Dr. Garfield, and the correspondent of THE IRON AGE is in position to state on the highest authority that at the present time the Director of Steel Supply is not in position to fix the percentage of steel that will be supplied to any non-war industry; in fact, he is attacking the problem from a different angle. The surplus of steel after the Government requirements have been met is certain to be very small, and Mr. Replogle does not believe that it would be wise to say to any industry that it shall have a certain percentage of last year's supply, in view of the rapid increase of Governmental requirements. Within the past week, for example, General Pershing has cabled orders for additional material that will aggregate a staggering amount of steel, including locomotives and cars in such quantity as to closely approximate Director General McAdoo's entire program of new rolling stock. In addition, the Railroad Administration is adding nearly 400 locomotives of special design, and will probably increase the order for 100,000 freight cars already placed by at least 40 per cent.

Mr. Replogle's policy with respect to the automobile industry will be that outlined in this correspondence last week; that is to say, he will endeavor to find steel enough to keep together manufacturers' organizations for the production of pleasure cars, and he will seek to round out inventories of material on hand

wherever it is practicable to do so. In this way manufacturers will be enabled to utilize their stocks of steel to the best advantage and to turn supplies of all materials into cash as rapidly as possible.

Automobile Steel Stocks

The automobile manufacturers have made an unsuccessful attempt to induce Dr. Garfield to revise his restrictive cut in the fuel supply for the production of pleasure cars. They have informed him that they have on hand sufficient stocks of steel to keep them going four months, from Aug. 1 next, and assurances from the War Industries Board that certain additional quantities of steel, which cannot now be estimated, will be available during the coming year. Under these circumstances, therefore, they have insisted that the fuel supply ought to be increased to equal the prospective supply of steel, and should certainly not be less than 50 per cent. of normal. Dr. Garfield has declined to modify his ruling, and officials of the Fuel Administration suggest that the automobile manufacturers will be able to utilize all their stocks of steel and such additions as they may be able to make to them during the coming year in the production of trucks or other cars for war use.

Conference with Iron and Steel Jobbers

Following the conference with the stove and furnace manufacturers, held here June 10, and described in THE IRON AGE last week, the Conservation Division, at the instance of Messrs. Baruch and Replogle, called a meeting of the leading jobbers in hardware, machinery, etc. This conference was held on June 13, and, according to the roster of the War Industries Board, was attended by the following prominent wholesalers.

- B. C. Wilner, Jr., Allied Machinery Corporation, New York.
 O. B. Baker, Baker-Jennings Hardware Co., Lynchburg, Va.
 W. L. Rodgers, Pittsburgh Gage & Supply Co., Pittsburgh.
 Alvin M. Smith, secretary Southern Supply and Machinery Dealers' Association and president Smith, Courtney Co., Richmond, Va.
 Thomas G. Hyman, president Hyman Supply Co., Wilmington and New Berne, N. C., also representing the Southern Supply and Machinery Dealers' Association.
 A. J. Bihler, James C. Lindsay Hardware Co., Pittsburgh.
 Charles Bond, Charles Bond Co., Philadelphia.
 Charles H. Ireland, president Odell Hardware Co., Greensboro, N. C.
 John Donnan, secretary-treasurer Southern Hardware Jobbers' Association, Richmond, Va.
 Charles D. Golden, vice-president Peden Iron & Steel Co., Houston, Texas.
 William T. Todd, Somers, Fittler & Todd Co., Pittsburgh.
 George K. McMullen, McMullen Machinery Co., Grand Rapids, Mich.
 W. M. Pattison, W. M. Pattison Supply Co., Cleveland.
 Frank J. McNeive, W. F. Potts, Son & Co., Philadelphia.
 J. D. Nicklis, Manning, Maxwell & Moore, New York.
 A. C. Pieper, Bruce & Cook, New York.
 W. S. Simpson, president C. T. Patterson Co., Ltd., New Orleans.
 William W. French, vice-president and general manager Moore-Handley Hardware Co., Birmingham, Ala.
 Richard W. Shapleigh, president Shapleigh Hardware Co., St. Louis.
 Herbert W. Strong, secretary Strong, Carlisle & Hammond Co., Cleveland.
 Henry E. Nickerson, secretary Congdon & Carpenter Co., Providence, R. I.
 Eugene McK. Froment, Froment & Co., New York.
 Charles H. Watkins, president Watkins-Cottrell Co., Richmond, Va.
 John B. Carse, Ogden & Wallace, New York.
 Thomas A. Fernley, secretary-treasurer National Supply and Machinery Dealers' Association, Philadelphia.
 J. G. Belding, secretary Lombard Iron Works & Supply Co., Augusta, Ga.
 Matthew B. Barkley, vice-president Cameron & Barkley Co., Charleston, S. C., and Jacksonville, Tampa and Miami, Fla.
 George D. McIlvaine, secretary-treasurer National Pipe and Supplies Association.

George V. Denney, vice-president and manager Georgia Supply Co., and president South Atlantic Supply Co., Savannah and Jacksonville, also president South Atlantic Supply Co., Savannah.

Paul E. M. Krueger, vice-president San Antonio Machine & Supply Co., San Antonio.

A. H. Chamberlain, secretary American Iron, Steel and Heavy Hardware Association, New York; and E. P. Sanderson, president E. P. Sanderson Co., Boston, also representing the American Iron, Steel and Heavy Hardware Association.

Jobbers' Stocks for Essential Uses

After the conference the War Industries Board issued an official statement concerning the matters discussed as follows:

Representatives of the board have been in conference this afternoon with representatives of jobbers in hardware, machinery and kindred lines. Fifty or more men from all branches of the trade were present representing all the large organizations in the trade, large individual concerns and some affiliated lines. The trade pledged full and hearty co-operation with whatever the board might request. Specific suggestions were volunteered by the trade for directing the flow of their stocks into essential uses.

Special consideration was given to the subject of organizing a small committee to represent all branches of the trade and all sections of the country and to sit in conference with the Priorities Committee, the Director of Steel Supply, and other officials of the War Industries Board needing its advice or assistance in apportioning steel to hardware jobbers, or in maintaining, increasing or reducing dealers' stocks. This plan was favorably received and it seems probable that it will be put into effect by the industry as a whole.

A form for monthly reports by jobbers, of the quantities sold of the several classes of goods handled, was placed before the meeting by the Director of Steel Supply, together with another form on which should be reported orders placed with mills during the same period. The jobbers will undertake to know accurately the uses to which goods distributed by them are to be put, and to discourage the undertaking of work not immediately essential, the postponement of which will help to relieve the non-war demands for iron and steel. It is anticipated that this report system can be put into effect to cover from June 1 on, thus furnishing the Director of Steel Supply and the Priorities Commissioner with monthly figures which will be of material assistance in their work.

To Save Steel by Standardizing

Following the meeting of the jobbers a delegation of eight members was selected to confer with the Conservation Division concerning specific methods of saving steel by standardizing heavy hardware and supplies and cutting out for the period of the war unnecessary sizes and varieties now carried by the trade. This delegation included Charles D. Golden, H. W. Strong, J. G. Belding, M. B. Barkley, W. W. French, W. P. Simpson, T. H. Hyman and W. L. Rodgers, and on June 15 conferred with Messrs. Shaw, Copeland, Ware, Dizer and Heacock of the Conservation Division. Tentative plans were made for reducing the varieties of reinforcing bars, pulleys, crowbars, shafting, cast and wrought-iron pipe, davits, bolts and nuts, and other materials carried by heavy hardware jobbers. Mr. Shaw, chief of the Conservation Division, requested the trade to draw up a specific program indicating all the varieties and sizes of the different articles to which production can advantageously be confined during the war. It is probable that after the committee of hardware men has investigated the subject further a questionnaire will be drawn up embracing its recommendations, and that this will be widely circulated among manufacturers, wholesalers and retailers, with a view to the adoption of a plan that will prove reasonably satisfactory to all interests.

Manufacturers of refrigerators also conferred with the Conservation Division during the past week on the subject of the possible restriction in the use of galvanized sheets. At this conference, curtailment of total output, use of sheets of lighter gage, and the employment of substitutes were canvassed. The refrigerator men are working on a conservation program that will be submitted to the War Industries Board at an early date.

W. L. C.

Iron and Steel Markets

PRICE CONFERENCE JUNE 21

Preliminary Manufacturers' Meeting in New York

Government Control Promises Important Changes in the Steel Trade

The War Industries Board and the iron and steel manufacturers' committee will take up at Washington on Friday the price schedule for the period beginning July 1. A preliminary meeting of iron and steel manufacturers has been called for Wednesday, June 19, at the Waldorf-Astoria, New York, to consider what advances, if any, should be asked for by producers.

Costs in the next quarter will be higher, the freight advances adding from \$1 to \$1.50 to pig-iron cost. Already Lake iron ore producers and various blast furnace companies have made up their case for higher prices, and more sharply than ever the diverging interests of large and small producers stand out.

The meeting of ore companies at Chicago last week showed the Steel Corporation's leaning toward the maintenance of the present schedule, from ore down the line. The fact that steam shovel mines can produce enough ore to go around is set over against the plea of underground mines that labor and freight advances have left them scant profit.

Tennessee pig iron makers have appointed a committee to argue at Washington that a higher pig iron price is imperative. Various Alabama iron companies have organized to protest against the new freight advances as inordinate.

No sign is given as to the Government's position in Friday's meeting except the dubious intimation that the War Industries Board has no suggestion in advance of hearing from the steel trade.

The price conference is plainly dwarfed by the changes involved in the new Government control of iron and steel distribution. A week's reflection has brought the conclusion that these will be more radical than the trade has been willing to believe. The future of the army of employees in sales organizations not only of iron and steel manufacturers but of 400 or more jobbing houses is no small factor, but it is only one. The feeling grows that six months will see great changes in the character of employment in various departments of the industry.

Leading jobbers in hardware and machinery have conferred with the conservation division of the War Industries Board, and one outcome is the starting of monthly reports to Washington of all shipments from stock. The problem of replenishing warehouse stocks under the priority certificate system is still unsolved and is giving no little uneasiness.

The Fuel Administrator's decision that pleasure car manufacture shall receive 25 per cent of the fuel supply devoted to that purpose last year is in conflict with the position of the Director of Steel Supply that no non-war industry can now be told how much steel it will be allowed to have. However, the policy will be to give manufacturers such

lots of steel as will supplement stocks on hand and convert these into cash as rapidly as possible.

Cabled orders from American headquarters in France in the past week call for a staggering amount of steel, including hundreds of locomotives and many thousands of cars. Besides, the Railroad Administration is planning to buy 400 locomotives of special design and to increase the order for 100,000 freight cars already placed by at least 40 per cent.

The wire market has been disturbed by indications that priority certificates will be required by some manufacturers, the jobbing trade being particularly affected. One effect has been an advance of \$2 a ton on wire nails and other wire products by some Central Western warehouses.

New lines are opened up for various metal-working plants by Director General Schwab's call for large additional ship boiler and engine capacity, in view of the program for 50 new shipways at existing yards. While the country's plate capacity may all be needed to make good on a 10,000,000-ton ship program for 1919, it is a question how long the present yards can take plates at the rate of the past two months.

Tin plate manufacturers will soon know whether the Government can secure the concession on pig-tin prices which the former consider necessary if the \$7.75 basis for tin plate is to continue. As against 81c. per pound in to-day's market, the British Government has been asked to secure contracts at 70 to 75 cents.

As a rule pig-iron producers, still without definite instructions from Washington, are making their largest shipments to foundries which lead in percentage of war work. The car lettings have caused a large inquiry for iron for malleable foundries. In the Central West 25,500 tons of basic iron has just been allocated, but considerable amounts of Bessemer and low phosphorous iron (12,000 tons of the latter) cannot be placed as yet.

Pittsburgh

PITTSBURGH, June 18.

Great interest attaches to the probable outcome of the meeting of Lake Superior ore producers and the Committee on Steel and Steel Products of the American Iron and Steel Institute, held in Chicago on Tuesday, June 11. The iron ore producers presented a strong case in their plea for an advance in prices of ore as fixed in 1916, especially the operators of underground mines. It is claimed that owing to the heavy advances in freight rates and in wages operators of shaft mines have left a very small margin of profit. The other side of the case is that the open pit mines can supply the needs of the country in Lake ore, so that the Government may take the position that no absolute necessity exists for an advance in prices in order to secure enough ore. At the Chicago meeting E. H. Gary made the statement that the steel trade was a good deal like a row of bricks, with ore as the key brick which if disturbed will affect the whole line from the ore to the smallest finished steel article. In other words, if prices of ore are advanced, producers of pig iron, semi-finished steel and finished steel would all make a claim for advances. Judge Gary argued that it was not an oppor-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	June 18 1918	June 11 1918	May 21 1918	June 20 1917
No. 2 X, Philadelphia....	\$34.25	\$34.25	\$34.25	\$49.75
No. 2, Valley furnace....	33.00	33.00	33.00	53.00
No. 2 Southern, Cincinnati.	35.90	35.90	35.90	46.90
No. 2, Birmingham, Ala....	33.00	33.00	33.00	44.00
No. 2, furnace, Chicago*	33.00	33.00	33.00	52.00
Basic, deliv., eastern Pa....	32.75	32.75	32.75	48.00
Basic, Valley furnace....	32.00	32.00	32.00	50.00
Bessemer, Pittsburgh....	36.30	36.30	36.15	55.35
Malleable, Chicago*	33.50	33.50	33.50	52.00
Malleable, Valley....	33.50	33.50	33.50	52.00
Gray forge, Pittsburgh....	32.75	32.75	32.75	47.95
L. S. charcoal, Chicago....	37.50	37.50	37.50	52.00

Rails, Billets, etc., Per Gross Ton:	June 18 1918	June 11 1918	May 21 1918	June 20 1917
Bess. rails, heavy, at mill.	55.00	55.00	55.00	38.00
O.-h. rails, heavy, at mill.	57.00	57.00	57.00	40.00
Bess. billets, Pittsburgh...	47.50	47.50	47.50	100.00
O.-h. billets, Pittsburgh...	47.50	47.50	47.50	100.00
O.-h. sheet bars, P'gh....	51.00	51.00	51.00	105.00
Forging billets, base, P'gh.	60.00	60.00	60.00	125.00
O.-h. billets, Phila....	50.50	50.50	50.50	110.00
Wire rods, Pittsburgh....	57.00	57.00	57.00	95.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	3.685	3.685	3.685	4.659
Iron bars, Pittsburgh....	3.50	3.50	3.50	4.75
Iron bars, Chicago.....	3.50	3.50	3.50	4.00
Steel bars, Pittsburgh....	2.90	2.90	2.90	4.50
Steel bars, New York....	3.095	3.095	3.095	4.669
Tank plates, Pittsburgh...	3.25	3.25	3.25	8.00
Tank plates, New York...	3.445	3.445	3.445	8.669
Beams, etc., Pittsburgh...	3.00	3.00	3.00	4.50
Beams, etc., New York...	3.195	3.195	3.195	4.669
Skelp, grooved steel, P'gh.	2.90	2.90	2.90	4.00
Skelp, sheared steel, P'gh.	3.25	3.25	3.25	6.00
Steel hoops, Pittsburgh...	3.50	3.50	3.50	5.25

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	June 18 1918	June 11 1918	May 21 1918	June 20 1917
Sheets, black, No. 28, P'gh.	5.00	5.00	5.00	8.00
Sheets, galv., No. 28, P'gh.	6.25	6.25	6.25	9.75
Wire nails, Pittsburgh....	3.50	3.50	3.50	4.00
Cut nails, Pittsburgh....	4.00	4.00	4.00	4.65
Fence wire, base, P'gh....	3.25	3.25	3.25	3.95
Barb wire, galv., P'gh....	4.35	4.35	4.35	4.85

Old Material, Per Gross Ton:

Carwheels, Chicago....	\$29.00	\$29.00	\$29.00	\$43.00
Carwheels, Philadelphia..	29.00	29.00	29.00	35.00
Heavy steel scrap, P'gh..	28.50	28.50	28.50	42.00
Heavy steel scrap, Phila.	29.00	29.00	29.00	37.00
Heavy steel scrap, Ch'go.	29.00	29.00	29.00	39.00
No. 1 cast, Pittsburgh...	28.50	28.50	28.50	37.00
No. 1 cast, Philadelphia..	29.00	29.00	29.00	32.00
No. 1 cast, Ch'go (net ton)	27.00	27.00	26.00	32.00
No. 1 RR. wrot, Phila....	34.00	34.00	34.00	55.00
No. 1 RR. wrot, Ch'go (net)	29.75	29.75	29.75	44.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$6.00	\$6.00	\$6.00	\$11.50
Furnace coke, future....	6.00	6.00	6.00	9.50
Foundry coke, prompt....	7.00	7.00	7.00	12.00
Foundry coke, future....	7.00	7.00	7.00	10.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	23.50	23.50	23.50	32.50
Electrolytic copper, N. Y.	23.50	23.50	23.50	32.50
Spelter, St. Louis.....	7.75	7.37½	7.25	9.50
Spelter, New York.....	8.00	7.62½	7.50	9.75
Lead, St. Louis.....	7.75	7.12½	6.85	11.50
Lead, New York.....	7.82½	7.25	7.05	11.75
Tin, New York.....	90.00	90.00	\$1.03	63.50
Antimony (Asiatic), N. Y.	13.50	12.75	12.50	19.00
Tin plate, 100-lb. box, P'gh.	\$7.75	\$7.75	\$7.75	11.00

tune time to disturb the present structure of prices. A meeting between the general committee of the American Iron and Steel Institute and the War Industries Board will be held at Washington on Friday this week, when the whole case in regard to ore will be gone over carefully and a decision reached as to whether ore prices shall remain as they are or be advanced. On Wednesday a preliminary meeting of iron and steel producers will be held in New York.

No tariffs have yet been issued by the railroads showing just what the advances are in freight rates on iron ore, coke, pig iron and finished steel products, and the trade is a good deal in the dark as to just how these advances will figure out. It may be some time yet before the completed tariffs are issued, as an enormous amount of work is involved in getting them out.

The steel trade is quickly adjusting itself to the new order of things under which blast furnaces, steel works and finishing mills are shipping their products by the direction of the Government. Many concerns whose supplies of pig iron and semi-finished steel have been reduced are making complaints that their products are just as essential to the conduct of the war as those of concerns whose supplies of pig iron and steel have not been disturbed. The answer of the producers of pig iron and steel is that these complaints should be taken to Washington, as the output of the blast furnaces and steel works is being shipped under Government direction entirely. Reports are still current of higher than Government maximum prices being paid for pig iron, steel billets and sheet bars, and on some lines of finished steel products, but these reports are strongly denied. It will be known in a very short time what changes, if any, are to be made in prices. The impression is strong in well-informed quarters that the price changes recommended by the War Industries Board this week for third quarter will be very few.

Pig Iron.—The production and shipment of pig iron are now entirely under Government direction, and al-

ready strong complaints are being made by some consumers whose supply has been curtailed. The pig-iron survey under way for about a month has not been completed, some fairly large consumers having flatly refused to fill out the blanks sent out by the blast furnaces supplying them with iron. Such refusals have come from two or three unexpected sources and have caused a good deal of comment in the trade. Very largely the pig iron being shipped is under Government orders, but in some cases iron is being taken from consumers whose products seem to be just as essential to the prosecution of the war as those of other concerns to whom the iron so taken away is diverted. The supply of coke so far this month has been very satisfactory, and there has been no complaint on this score from furnaces in the Pittsburgh district. Only three stacks in this district are idle—two Edgar Thomson and one Clairton stack of the Carnegie Steel Co. Some furnaces have been able to accumulate fair-sized stocks of coke and expect to have a steady run right through the summer. Prices in effect until June 30 are as follows:

Basic pig iron, \$32; Bessemer, \$35.20; gray forge, \$32; No. 2 foundry, \$33; No. 3 foundry, \$32.50, and malleable, \$33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh districts being \$1.10 per ton.

Billets and Sheet Bars.—The entire output of semi-finished steel in the forms of billets and sheet bars is now under complete direction of the Government, but so far there have been very few diversions of steel from one consumer to another, as the mills had the distribution of steel well in hand before the order of June 7 went into effect. So far there has been very little hot weather and the heavy production rate has been fully maintained. There is still an acute shortage in supply of sheet bars, and to very large extent in billets as well. It is impossible to buy either in the open market. Mills selling sheet bars to the sheet and tin plate trade are furnishing bars rolled from Bessemer steel

almost entirely, using their output of open-hearth steel for the rolling of Government orders.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$47.50, sheet bars \$51, forging ingots \$73, and forging billets \$60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Ferroalloys.—New inquiry for ferroalloys was not so active in the past week, and it is believed consumers have pretty well covered their needs for the year. One consumer that has been in the market for some time for 1000 tons of ferromanganese for the second half is reported to have closed, taking 70 per cent alloy at \$250 delivered, and also 500 tons of 16 to 18 per cent spiegel-eisen for same delivery at about \$65 at furnace. Prices on all kinds of ferroalloys are very firm.

We quote 70 per cent ferromanganese at \$250 delivered, 16 per cent spiegel-eisen at \$65 to \$70 at furnace and 50 per cent ferrosilicon for prompt shipment at \$160 and for delivery over the last half of the year, \$150 to \$155 at furnace, the furnaces usually absorbing the freight.

We now quote 9 per cent Bessemer ferrosilicon at \$54; 10 per cent, \$55; 11 per cent, \$58.30; 12 per cent, \$61.60. We quote 6 per cent silvery iron, \$41; 7 per cent, \$43; 8 per cent, \$45.50; 9 per cent, \$47.50; 10 per cent, \$50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2 per gross ton, for delivery in the Pittsburgh district.

Structural Material.—The new shops which the McClintic-Marshall Co. is to build at Leetsdale, Pa., and at Pottstown, Pa., for fabricating ship plates will each have a monthly capacity of 10,000 tons. The company has taken a contract for 12,000 to 15,000 tons of structural steel for six ways and buildings for the New York Shipbuilding Corporation at Camden, N. J. Very little new commercial work is under way, owing to the high prices of materials and labor, and the delays in delivery. We quote beams and channels up to 15 in. at 3c. at mill Pittsburgh.

Plates.—Practically 100 per cent of the present heavy output of plates is going to the Government, and mostly on direct orders. The Carnegie Steel Co. has taken in the past week upward of 250,000 tons of sheared plates for cars and tank steamers, the latter to be built by the Newport News Shipbuilding & Dry Dock Co. It is said the Carnegie company, which is now turning out plates at the rate of over 1,500,000 tons per year, is sold up, not only over the remainder of this year, but for nearly all of 1919. The steel car companies are now getting deliveries on the plates and shapes for the Government cars, and these will be put in service as fast as they can be turned out. We quote ¼-in. and heavier sheared plates at 3.25c. at mill, Pittsburgh.

Iron and Steel Bars.—Practically 100 per cent of the product of iron and steel bar mills is going to the Government on direct and indirect orders, but a fair amount of iron bars is available for the commercial trade for delivery over the next three or four months. Implement makers and other large consumers of steel bars are specifying heavily against contracts, but the new demand for reinforcing bars is not very active, owing to dullness in new building operations. We quote steel bars rolled from steel billets at 2.90c., from old steel rails, 3c., and refined iron bars at 3.50c. at mill Pittsburgh. These Government prices are in effect until June 30.

Sheets.—Independent sheet mills report the increasing trouble in getting sheet bars. In the last half of May they operated at slightly less than 75 per cent of capacity, and it is probable operations will fall off further this month due to the shortage in steel. It is said that in the past week the Government has come in the market for very large quantities of blue annealed, black and corrugated sheets, much of the material for shipment to France. All the sheet mills are filled up through the third quarter, and some of the larger makers with orders on books and in sight have little material to sell for this year. Jobbers report they get sheets fairly promptly when able to furnish priority orders; their stocks were depleted in filling Government direct or indirect orders. Government prices on sheets, in effect until June 30, are given on page 1627.

Tin Plate.—It will be known very soon whether the Government has been able to put through its plans by which manufacturers of tin plate are to be assured of

a standard price on pig tin over the second half of the year, fixed at about 70c. per lb. The co-operation of the British Government will have to be secured before the plan can be carried out, but it is believed this will be obtained. Makers of tin plate feel it would be unfair to reaffirm the present price for last half of the year if prices of pig tin are to remain as high as they are at present. Operation is still on about a 95 per cent basis, and output is estimated at about 800,000 boxes per week. A falling off is looked for as soon as real hot weather arrives. We quote tin plate up to June 30 at \$7.75 per base box, f.o.b., Pittsburgh, rolled from Bessemer or open-hearth steel. Prices on terne plate are given on page 1627.

Steel Rails.—New demand for light rails from the coal mining and lumber interests is quite active. The Government price on 25 to 45 lb. sections up to June 30 is \$3 per 100 lb., f.o.b., Pittsburgh. Prices on Bessemer standard sections are from \$60 to \$62, and open-hearth \$63 to \$65 at mill.

Cotton Ties.—Most consumers are covered for their needs for this year, prices for delivery starting for July 1 to be those as fixed by the War Industries Board at its meeting to be held in Washington within the next few days. The price for cotton ties for remainder of June is \$1.92 per bundle of 45 lb. in lots of 3000 bundles and over, 2c. per bundle higher for less than 3000 bundles, f.o.b., Pittsburgh.

Wire Rods.—New demand for soft Bessemer and open-hearth rods is very active, also for high carbon rods, but the available supply is limited. As a rule rod mills are not running to full capacity, being unable to get sufficient steel. One company in this city that has two rod mills has been operating only one for nearly two months. Prices on rods in effect until June 30 are given on page 1627.

Wire Products.—Mills report the Government is taking practically 100 per cent of their limited output of wire and wire nails on priority orders. The demand from the commercial trade is very heavy, and nearly every day mills are turning down desirable orders from customers they have served for years. Jobbers' stocks are low and on the more common sizes are about exhausted. One leading jobber in this city did not have in stock a single keg of 8d nails. The Government price on cut nails up to June 30 is \$4 per keg, base, f.o.b. Pittsburgh. Prices on wire nails and wire are given on page 1627.

Hoops and Bands.—Close to 100 per cent of the output is moving on Government direct and indirect orders and it is much restricted owing to shortage of steel supply. We quote steel hoops for cooperage purposes and steel bands at \$3.50 per 100 lb., f.o.b. Pittsburgh. Extras and differentials in effect were given on pages 1357 and 1374 in THE IRON AGE of May 23.

Hot-Rolled Strip Steel.—Output is being more and more restricted owing to steel scarcity. It is said to run between 50 and 60 per cent, and mostly on Government orders. The Government price is \$3.50 per 100 lb. f.o.b. Pittsburgh. Extras and differentials in effect were given in full on pages 1357 and 1374 in THE IRON AGE of May 23.

Cold-Rolled Strip Steel.—Not more than 60 to 70 per cent of normal capacity is the outturn. A good deal of it is being distributed by jobbers to customers who can show they need the material for war purposes. We quote cold-rolled strip steel at \$8.50 per 100 lb. f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days when sold in quantities of 300 lb. or more; freight allowed to destination when it does not exceed 31c. per 100 lb.

Shafting.—Makers report the output is not over 60 to 70 per cent of normal capacity, and supply is being restricted more and more to shafting makers. Even concerns that make their own steel are not able to spare enough for full operation of their own shafting departments. Jobbers are distributing fairly large quantities when it can be shown the material is to be used in making war essentials. We quote cold-rolled shafting at 17 per cent off list in carloads and 12 per cent in less than carloads, f.o.b. Pittsburgh.

Nuts and Bolts.—Nearly the entire output, about 75 per cent of capacity, is going to the Government on direct orders, but a small part is being shipped to jobbers for war essential work. Neither makers nor jobbers will accept orders for nuts and bolts unless the customers furnish priorities certificates. It is believed present discounts, which expire on June 30, will be reaffirmed by the War Industries Board for the third quarter, and these discounts are given on page 1627.

Rivets.—A meeting of rivet makers is to be held in New York on Wednesday, June 19, to prepare data to present to the War Industries Board to secure higher prices. Present output is not more than 75 per cent of normal, and nearly all of it is going to the Government on direct orders, jobbers distributing only a small supply, and only on priority orders. We quote cone head structural rivets at \$4.40 and cone head boiler rivets at \$4.50 per 100 lb. and small rivets 50 and 10 per cent off list, f.o.b. Pittsburgh.

Spikes.—No large orders for spikes have come out from the railroads recently, but the new demand for small spikes and boat spikes is very heavy, and on these makers are sold up for four or five months ahead. We quote:

Standard sizes of railroad spikes 9/16 x 4 1/2 in. and larger, \$3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, \$5.25 per 100 lb., track bolts, \$4.90 base in lots of 200 kegs or more; less than 200 keg lots, \$1 per 100 lb. extra. All f.o.b. Pittsburgh.

Skelp.—Mills are sold up over the remainder of the year, and are turning down inquiries nearly every day on which they are unable to quote.

We quote grooved skelp at \$2.90; universal skelp, \$3.15, and sheared skelp, \$3.25 base. Special skelp for boiler tubes, etc., is \$3.40 for base sizes and \$3.55 for other sizes, all prices being per 100 lb., f.o.b. Pittsburgh.

Wrought Pipe.—Jobbers are co-operating closely with the mills, and are furnishing to some mills weekly reports showing distribution in net tons of tubular goods, not only from the mills but also on shipments from stock. This is being done so that it may be readily known whether jobbers' shipments apply to Government requirements. The Government is still placing heavy orders for steel and iron pipe to be used in large warehouses it is erecting in this country, and also for shipment to buildings it is erecting in France. None of the pipe mills has practically any material to sell for delivery this year. Discounts on iron and steel pipe are given on page 1627.

Boiler Tubes.—Mills are sold up on iron and steel tubes over this year and several makers of seamless steel tubes report they have their entire output sold into July or later next year. The demand for oil country goods is enormously heavy and they are very difficult to obtain. Much more oil development work would be going on if the oil wells supplies could be obtained more promptly. The discounts on iron and steel tubes are given on page 1627.

Coke.—There is no further complaint from blast furnaces over supply of coke. In fact some blast furnaces have been able to accumulate fairly large stocks of coke, the first time in some months. Some contracts for furnace coke at prices ranging from \$7.50 to \$8 per net ton made prior to the time the Government fixed prices expire on June 30 and it need hardly be said that consumers are very glad of the expiration of these contracts. There has been no contracting in foundry coke for some time, and the new demand for it is quite active. The supply of cars is fully large enough to take the entire output of coke, which is still running about 100,000 tons per week less than normal. We quote 48-hr. blast furnace coke at \$6, 72-hr. foundry coke \$7 and crushed coke from 1 in. size \$7.35, all in net tons at oven. The Connellsville *Courier* gives the output of coke for the week ended June 8 as 341,020 tons, a decrease from the previous week of 2000 tons.

Old Material.—Conditions in the local scrap trade are practically unchanged except that dealers report it is getting harder to procure scrap. One dealer states that he could sell in a very short time 250,000 tons of steel works scrap if he could procure it. Railroads are largely adopting the policy of selling their scrap direct to consumers and this is cutting

dealers out of a good deal of trade they formerly enjoyed. Dealers say they would be perfectly satisfied to carry on business on the 3 1/2 per cent commission plan if they could get enough scrap to meet the demands, but owing to the supply of scrap being so largely localized, this is impossible. We note a sale of 500 tons of heavy steel melting scrap at \$29 and 300 tons of low-phosphorous melting scrap at \$39 per gross ton delivered, the buyers paying the 3 1/2 per cent commission. Dealers say that all grades of scrap are bringing full Government prices. Prices on iron and steel scrap, nearly all fixed by the Government, in effect until June 30 for delivery in Pittsburgh and other consuming points that take Pittsburgh freights are as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	\$28.50 to \$29.00
No. 1 cast scrap (for steel plants)	28.50 to 29.00
Re-rolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh	33.00 to 34.00
Hydraulic compressed steel scrap	28.00 to 29.00
Bundled sheet scrap, sides and ends, f.o.b. consumers' mills, Pittsburgh district	24.00 to 25.00
Bundled sheet stamping scrap	22.00 to 23.00
No. 1 railroad malleable scrap	28.00 to 29.00
Railroad grate bars	18.00 to 19.00
Low phosphorus melting stock (un-guaranteed)	34.00
Low phosphorus melting stock (guaranteed)	36.50
Low phosphorus melting stock (bloom and billet ends, heavy plates)	39.00
Iron car axles	46.00 to 46.50
Locomotive axles, steel	46.00 to 46.50
Steel car axles	46.00 to 46.50
No. 1 busheling scrap	28.00 to 29.00
Machine shop turnings	18.00 to 19.00
Cast iron wheels	28.00 to 29.00
Rolled steel wheels	34.00 to 36.00
Sheet bar crop ends (at origin)	34.00 to 35.00
Cast iron borings	18.50 to 19.00
No. 1 railroad wrought scrap	33.00 to 34.00
Heavy steel axle turnings	23.00 to 24.00
Heavy breakable cast scrap	28.00 to 29.00

Cincinnati

CINCINNATI, June 18.—(By Wire.)

Pig Iron.—The overshadowing question now is whether there will be any iron left over after Government requirements are taken care of. A considerable tonnage of foundry iron in the South is yet to be disposed of, and while no definite instructions have been received as to selling iron for forward delivery, the furnaces are not willing to make new contracts. Another precaution taken voluntarily is to urge forward shipments to firms known to be doing essential work but those concerns which have not yet sent in the answers to the questionnaire will have to get their iron later on. Fortunately this list of melters is limited. No definite instructions concerning priority orders have been received and a ruling on this question would be received with relief by both seller and consumer. A somewhat hazy idea exists as to what is a non-essential industry. The coming advance in freight rates will cause the foundries to readjust their prices on castings, but the change will not be a radical one. A matter of very much interest concerns the Institute's committee meeting in New York this week. Beyond the freight rate advance it is believed here that no changes in iron will be made that will be sufficiently large to cause a distributing of the load to finished products. Shipments from all districts are moving freely.

Based on freight rates of \$2.90 from Birmingham and \$1.26 Iron-ton, we quote f.o.b. Cincinnati, as follows:

Southern Coke, No. 2 foundry and No. 2 soft ..	\$35.90
Southern Ohio, No. 2	34.26
Basic, Northern	33.26

Finished Material.—Practically none of the jobbers is selling any material without a priority order except in the case of very small lots of material that they know are for essential purposes. The question of having to obtain priority orders delays business a great deal, and jobbers are discouraging any building operations that would not come under the essential list. Local stocks are running low and mill shipments are moving slowly. A manufacturer of steel pipe recently

canvassed the jobbing trade asking them to give information as to how much its different customers consumed during the month of May. Replies were made promptly and it is estimated that very little pipe is going to non-essential users. Wire nails are still scarce and the situation is likely to become more acute later on. Barb wire is practically unobtainable, although there is a big demand for it from agricultural districts.

Jobbers' prices are as follows: Iron and steel bars, 4.08½c.; twisted bars, 4.36½c. base; structural shapes, 4.18½c.; plates, ½-in. and heavier, 4.43½c.; No. 10 blue annealed sheets, 5.43½c.; cold rolled shafting, 10 per cent plus list. The mill price on No. 28 black sheets remains at 5.18½c., and on No. 28 galvanized, 6.43½c. The warehouse price on wire nails is now at \$4.20 per keg base.

Coke.—Reports were received to-day from different districts and the same complaint is registered that labor is getting more unreliable as the hot season advances. The past two or three days was especially trying for producers in the Connellsville field, one of whom states that the labor shortage is much worse than for several weeks past. Cars are being furnished at a satisfactory rate by the railroads. Very little new contracting is reported, and the only coke changing hands is for nearby shipment.

Old Material.—A larger demand from consumers has helped to strengthen the market, but on many grades the full Government price is not paid at this point. Business transactions are somewhat heavier but the possible readjustment of prices on July 1 has tended to cut down the size of many future contracts. The following are dealers' prices, f.o.b. at yards, southern Ohio and Cincinnati:

Per Gross Ton	
Bundled sheet scrap.....	\$21.00 to \$21.50
Old iron rails.....	33.50 to 34.00
Relaying rails, 50 lb. and up.....	44.50 to 45.00
Rerolling steel rails.....	32.00 to 32.50
Heavy melting steel scrap.....	27.50 to 28.00
Steel rails for melting.....	27.50 to 28.00
Old carwheels.....	28.50 to 29.00
Per Net Ton	
No. 1 railroad wrought.....	\$29.00 to \$29.50
Cast borings.....	13.50 to 14.00
Steel turnings.....	13.50 to 14.00
Railroad cast.....	25.00 to 25.50
No. 1 machinery.....	26.00 to 26.50
Burnt scrap.....	17.50 to 18.00
Iron axles.....	40.00 to 40.50
Locomotive tires (smooth inside)....	35.50 to 36.00
Pipes and flues.....	21.00 to 21.50
Malleable cast.....	24.50 to 25.00
Railroad tank and sheet.....	18.50 to 19.00

British Steel Market

Pig Iron Market Active and Strong—Tin Plates Active—Ferromanganese Irregular

(By Cable)

LONDON, ENGLAND, June 19.

Pig-iron deliveries for domestic consumption continue heavy and there is an all-around insistent pressure for hematite iron. The situation in British semi-finished steel is less stringent but orders are still restricted to essential work. American semi-finished steel is nominal. The tin-plate market is more active and large Allied orders have been placed, basis 32s 1½d. Ferromanganese is irregular at \$255 c.i.f. Atlantic ports. We quote as follows:

Tin plate coke, 14 x 20; 112 sheets, 108 lbs., f.o.b. Wales, 32s 1½d.
 Ferromanganese, \$255, c.i.f. for export to America; £26 10s for British consumption.
 Ferrosilicon, 50 per cent, c.i.f., £35 upward.
 On other products control prices per gross ton are:
 Hematite pig iron, East Coast, £6 2s 6d; West Coast, £6 7s 6d.
 Cleveland pig iron, £4 15s for No. 3 and £6 for basic.
 Steel plates, ship, bridge and tank, £11 10s.
 Steel sheets, black plate, all open annealed, produced in sheet mills, £16 to £18.
 Bar iron, standard quality, £13 17s 6d; marked, £16.
 Sheet and tin plate bars, £10 7s 6d.
 Blooms and billets for rerolling (ordinary), £10 7s 6d; special quality, £11.

The Queensland Government geologist has been carrying on investigations that have resulted in the discovery of a large quantity of iron ore about 14 miles from Warwick. Tests show the ore to contain 66 per cent of iron, which is the same percentage as that smelted at Newcastle.

Chicago

CHICAGO, June 17.—(By Wire.)

The leading producer of wire and wire products has sent out to the trade the War Industries Board's resolutions governing future distribution of steel products. This action has caused much questioning, especially among jobbers, as their status has not yet been defined and it is a question as to the manner and extent they will be permitted to replenish their stocks. Producers of other steel products and of pig iron do not regard the new distribution order as entirely clear and are awaiting more light before they determine in detail how they will regulate their business. Of course, the Government's mandate must be obeyed. There is no disposition to do otherwise, yet innumerable questions arise. Meanwhile Government orders for steel multiply. The leading mill has thus far received 285,000 tons of material for the cars exclusive of the axles it booked. The leading independent to-day booked nearly 60,000 tons of shell steel. Last week it received specifications for 9000 tons of rivet rounds required for the cars and 3000 tons of blue annealed sheets to be used in composite cars. These are mentioned merely to show the trend. The chief concern of the mills is production.

Tennessee iron producers will appeal for an advance in price and also suggest that this be accomplished by placing pig iron on a net ton basis. Alabama producers have protested against what they term the inequitable inequality of Director General McAdoo's freight rate advance as contained in order No. 28. The country is to be scoured for old material at the suggestion of Director Replogle, and through the medium of the American Board of Scrap Iron Dealers.

Pig Iron.—Furnace representatives are in a state of uncertainty and disposed to be wary in taking on new commitments pending a clarification of the recent statement of the War Industries Board regulating deliveries of pig iron and steel products. There is some inquiry for next year, but none of the producers is considering that. Some Southern last-half iron is yet to be placed, but in most instances the sellers are waiting for more definite instructions. They could sell and should mistakes be made the iron would never be received by a melter not entitled to it; but they are naturally not inclined to encumber their books unnecessarily and perhaps make trouble for themselves. One Southern furnace is making deliveries but is applying its best judgment to keep within Government stipulations, having classified its customers in a way that would seem to meet the requirements. No cases have come to light where foundries were obliged to shut down for want of iron, but a few that have not watched the course of events carefully are on the verge of a shut down. As stated previously, a surprisingly large percentage of contracts can be covered by priority. The Tennessee producers at a meeting June 11 at Nashville organized the Tennessee Pig Iron Association. W. H. Smith, Bon Air Coal & Iron Co., was made president; L. C. Crewe, LaFayette Iron & Coal Co., vice-president, and H. F. Ambrose, secretary and treasurer. It was decided at the Nashville meeting that conditions warrant an advance in the price of pig iron and a committee was appointed to appear at Washington to press the point. Also discussed was the question of taking this opportunity to establish pig iron on a net ton basis as this would operate to give the producers an advance in price, also simplify bookkeeping and figuring. On June 12 a meeting of Alabama producers was held in Birmingham to protest against what were declared to be inequitable inequalities in freight rate advances. A protest, which was signed by the Guld States Steel Co., Sless Sheffield Steel & Iron Co., Trusville Iron Works and the Alabama Co., was sent to Senators Bankhead and Underwood and Representatives Huddleston and Oliver. The protest stated that serious hardship will result from the withdrawal of intrastate rates in conflict with interstate rates. It was stated that since 1915 Alabama lines had advanced rates on ore, coal and coke as follows: Coke, 66 2/3 per cent; coal, 80 per cent, and ore, 100 per cent on certain hauls. Director McAdoo's order No. 28 contemplates a further advance, amounting to 100 per cent in some cases, and this is

stated to be unfair, inasmuch as higher commodities are only asked to stand a uniform advance of 25 per cent.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5.....	\$37.50
Lake Superior charcoal, No. 6 and Scotch	\$39.00 to 40.50
Northern coke foundry, No. 1.....	33.50
Northern coke foundry, No. 2.....	33.00
Northern coke foundry, No. 3.....	32.50
Northern high-phosphorus foundry.....	33.00
Southern coke No. 1 foundry and No. 1 soft.....	38.50
Southern coke, No. 2 foundry.....	37.00
Malleable	33.50
Basic	32.00
Low phosphorus (copper free).....	53.00
Silvery, 7 per cent.....	54.54

Ferroalloys.—Ferromanganese and spiegeleisen have been fairly active, principally in small lots. A lot of 80 tons of 80 per cent material made on the Pacific Coast figured in the transactions, the price being \$282 per ton. Standard 70 per cent ferromanganese is quoted at \$250 delivered and spiegeleisen at \$75, furnace.

Plates.—The mills are loaded to the hilt with commitments for material required for ships, railroad cars and other Government work. Getting out the product with a minimum of conflict over the requirements of the different branches of the Government is the only concern of the mills. The official mill quotation is 3.25c., Chicago or Pittsburgh, and jobbers quote 4.45c. Even priority certificates cannot insure delivery.

Structural Shapes.—No fabricating jobs are reported. The ordinary consumer is in as much of a predicament with regard to shapes as he finds himself in the matter of plates. The official mill quotation is 3c., Chicago or Pittsburgh, jobbers quoting 4.25c. when they are satisfied as to the essential nature of the demand.

Bars.—The stoppage of building operations, for one reason or another, has an adverse effect on the market in concrete reinforcing bars, but the steel is finding employment elsewhere. Mild steel bars are practically unobtainable. The bar iron mills have idle capacity, but the outlook is more promising in view of the shortage of steel. The leading independent last week received an order for 9000 tons of rivet rounds required for Government cars. With the same company was placed to-day nearly 60,000 tons of shell steel. We quote:

Jobbers' prices: Soft steel bars, 4.10c.; bar iron, 4.10c.; reinforcing bars, 4.10c.; base, with 5c. extra for twisting sizes $\frac{1}{2}$ in. and over and usual card extras for smaller sizes; shafting, list plus 10 per cent.

Mill prices are: Iron bars, 3.50c., Chicago; rail carbon, 3c., Chicago; mild steel bars, 2.90c., Chicago or Pittsburgh.

Sheets.—Among orders placed locally in the week was one for 3000 tons of blue annealed sheets required for freight cars of the composite type. A leading mill is selling no sheets and reports the labor situation bad and sheet bars scarce, and inasmuch as it is behind in its obligations it has no desire to sell. We quote No. 28 black at 5c., No. 28 galvanized, 6.25c., and No. 10 blue annealed at 4.25c., all Pittsburgh.

We quote for Chicago delivery out of stock, regardless of quantity, as follows: No. 10 blue annealed, 5.45c.; No. 28 black, 6.45c., and No. 28 galvanized, 7.70c.

Wire Products.—One important mill will henceforth make no deliveries against orders that do not have the support of priority certificates. The only product not subject to the rule is bale ties. Where orders are not accompanied by priority they are at once declined. The jobbers are particularly hard hit, as their status has not yet been fixed and the extent to which they will be permitted to replenish their stocks is uncertain. We quote:

Nails, \$3.50, Pittsburgh; plain fence wire, \$3.25; painted barb wire, \$3.65; galvanized barb wire, \$4.35; polished staples, \$3.65, and galvanized staples, \$4.35.

Bolts and Nuts.—The lid is tighter on material and the demand for bolts and nuts is greater. Where consumers can obtain priority certificates, which enable the makers to obtain rods, they will be served, otherwise

not. For prices and freight rates see finished iron and steel f.o.b., Pittsburgh. Jobbers quote:

Structural rivets, 5.50c.; boiler rivets, 5.60c.; machine bolts up to $\frac{3}{8}$ x 4 in., 40 and 10 per cent off; larger sizes, 35 and 5 off; carriage bolts up to $\frac{3}{8}$ x 6 in., 40 and 2½ off; larger sizes, 30 and 5 off; hot pressed nuts, square tapped, \$1.05 off, and hexagon tapped, 85c. off per 100 lb.; coach or lag screws, gimlet points, square heads, 50 per cent off.

Cast-Iron Pipe.—No business old or prospective is reported. Prices are revised by the change in freight rates.

Quotations per net ton, Chicago, are as follows: Water pipe, 4-in., \$63.65; 6-in. and larger, \$60.65, with \$1 extra for class A water pipe and gas pipe.

Rails and Track Supplies.—One mill which has sufficient rail orders to keep its capacity busy for a year is 400,000 tons behind on its orders. The Railroad Administration is not buying rails, it needs deliveries against old orders. Meanwhile a considerable percentage of rail mills are busy on shell steel. We quote:

Standard railroad spikes, 4.11½c., Chicago. Track bolts, with square nuts, 5.11½c., Chicago. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c.; f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill for 25 to 45-lb. sections, lighter sections taking Government extras.

Old Material.—A good demand exists for steel scrap, but not so much for rolling mill grades. Material is not moving heavily despite the effort to ship before the higher freight rates become effective, June 25, all of which indicates a dearth of scrap. In realization of this, the chairman of the sub-committee on scrap, as noted elsewhere, is asking scrap iron dealers to co-operate in locating and reporting all lots of unprepared scrap, and to report quantities they have on hand and if they are operating to capacity. C. A. Barnes, secretary American Board of Scrap Iron Dealers, joins in the appeal, suggesting that local newspapers be used in urging the small dealer, farmer and householder to collect all the scrap iron they can. In this connection the western division of the board, D. R. Cohen, secretary, Chicago, is sending a questionnaire to 2000 dealers. The Grand Trunk and the Chicago & Alton have issued small lists, the latter offering a small rail tonnage.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails.....	\$38.00 to \$39.00
Relaying rails	60.00
Old carwheels	29.00
Old steel rails, rerolling	34.00
Old steel rails, less than 3 ft.....	34.00
Heavy melting steel.....	29.00
Frogs, switches and guards, cut apart.....	29.00
Shovelling steel	29.00
Steel axle turnings.....	24.00
Per Net Ton	
Iron angles and splice bars.....	\$34.82
Iron arch bars and transoms.....	\$40.50 to 41.50
Steel angle bars.....	29.00 to 30.00
Iron car axles.....	41.52
Steel car axles.....	41.52
No. 1 railroad wrought.....	29.75 to 30.36
No. 2 railroad wrought.....	27.75 to 28.25
Cut forge	27.75 to 28.25
Pipes and flues.....	23.50 to 24.00
No. 1 busheling.....	26.00 to 26.50
No. 2 busheling.....	17.50 to 18.00
Steel knuckles and couplers.....	30.36
Coil springs	30.36
No. 1 cast scrap.....	27.00 to 27.50
Boiler punchings	32.00 to 33.00
Locomotive tires, smooth.....	37.00 to 38.00
Machine-shop turnings	15.50 to 16.00
Cast borings	15.75 to 16.25
No. 1 cast scrap.....	27.00 to 27.50
Stove plate and light cast scrap.....	23.00 to 23.50
Grate bars	23.00 to 23.50
Brake shoes	24.00 to 24.50
Railroad malleable	29.50 to 30.00
Agricultural malleable	28.00 to 29.00
Country mixed scrap.....	20.00 to 20.50

Birmingham

BIRMINGHAM, June 17.

Pig Iron.—Ironmasters of the Birmingham district have commenced studious application of the Government's requirements as to priority in shipments and all new business will undergo scrutiny as to its connection with war ends before being placed. Makers of the district agree that around 80 per cent of the output is already going to plants directly or indirectly making war purpose material, so that no very serious diversion of orders is expected. However, the non-essential shops

will hereafter come in for residue only. Stocks in yards decreased to a greater extent in June than in any month in a long time, the net outgo being around 50,000 tons. There is not over 60,000 tons of foundry left in yards and there is practically no free foundry outside of some off grade metal. There is a greater supply of basic, but, as everyone knows, this is pre-empted by its makers for their own use. Car service remains good and that but adds to the imminency of an iron famine. A stupendous effort is being put forth by the Birmingham district through union mine leaders as well as civic bodies to induce the miner to put in 8 hr. per day six days in the week, with prospect of results. The Tennessee company has blown in Little Belle furnace in Bessemer after repairing and enlarging it and the metal will be taken hot to the steel mills at Ensley. Wire orders for the Government and Italy were booked in the week. No future delivery iron orders are reported. Makers are confident that the price revision, owing to advanced freight rates, will be upward. All stand ready for full compliance with the Government's schedule. June production, it is expected, will compare favorably with that of the same month in 1917. We quote per gross ton f.o.b., Birmingham district furnaces, as follows: No. 2 foundry and soft, \$33, and basic, \$32.

Cast-Iron Pipe.—There was an influx of orders from the Pacific Coast to the sanitary pipe shops for rush shipments incident to the new freight rates. Outside of this these plants continue to operate on a low scale. The Montgomery and other cantonments have placed additional orders both for water and sanitary pipe.

Coal and Coke.—A joint appeal of all interests for 100 per cent efficiency by individual miners is expected to increase the coal production beyond the present, which is below that of last year. Coke production is in the same state. Cars are plentiful. A final showdown on establishing a coal-carrying barge line on the Warrior River Canal is expected at a hearing before Judge Prouty of the Interstate Commerce Commission, to whom Director-General McAdoo has referred the matter.

Old Material.—There is a liberal movement of old material to Southern consuming points, which take the far greater part of the supply, notably heavy melting steel and No. 1 scrap. Prices remain largely subject to local conditions in the South and no change is noted this week. We quote per gross ton f.o.b., Birmingham district yards, prices to consumers, as follows:

Old steel axles.....	\$34.00 to \$35.00
Old steel rails.....	28.00 to 28.50
Heavy melting steel.....	25.00 to 26.00
No. 1 railroad wrought.....	30.00 to 32.00
No. 1 cast.....	27.00 to 28.00
Old carwheels.....	29.00 to 29.50
Tramcar wheels.....	26.00 to 26.50
Machine shop turnings.....	15.00 to 16.00
Cast iron borings.....	15.00 to 16.00
Stove plate.....	23.00 to 23.50

St. Louis

ST. LOUIS, June 17.

Pig Iron.—Representatives are able to sell occasional odd lots of off analysis iron. The announced intention of the Government to send more of its work into the West, to relieve the congestion in the East, is giving hope to plants which are seeking contracts to keep their organizations intact and their plants in operation.

Coke.—Supply is still short with uneasiness increasing as the time for the annual contracting draws near. No definite statements have been made by producers as to what may be expected. Both by-product and beehive coke business is affected.

Finished Iron and Steel.—A little business is being transacted in some of the products already manufactured which cannot be utilized in Government work. Warehousemen are handling the situation as well as they can. For stock out of warehouse we quote as follows: Soft steel bars, 4.17c.; iron bars, 4.17c.; structural material, 4.27c.; tank plates, 4.52c.; No. 8 sheets, 5.47c.; No. 10 blue annealed sheets, 5.52c.; No. 28 black sheets, cold rolled, one pass, 6.52c.; No. 28 galvanized sheets, black sheet gage, 7.77c.

Old Material.—Dealers are still engaged in a mad rush to get everything on order shipped before the new freight rates go into effect, but they are still handicapped by the lack of cars and the shortage of labor. The local industries are showing a disposition to buy and really seem to be in active need of material, but there is little available. All plants which have had embargoes have raised them and are taking in all the material that is coming to them under their contracts while at the same time seeking more scrap. This has had the effect of stiffening the market though there has been little change to be noted in the actual figures. Lists out were few and the only one of consequence was one of 750 tons from the Terminal Association. Railroads generally report inability to pick up old material or to find cars for its transportation to the plant of the consumer. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails.....	\$36.50 to \$37.00
Old steel rails, rerolling.....	33.50 to 34.00
Old steel rails, less than 3 ft.....	31.00 to 31.50
Relaying rails, standard sections, subject to inspection.....	60.00 to 65.00
Old carwheels.....	28.50 to 29.00
No. 1 railroad heavy melting steel scrap.....	28.00 to 28.50
Heavy shoveling steel.....	26.50 to 27.00
Ordinary shoveling steel.....	26.00 to 26.50
Frogs, switches and guards, cut apart.....	28.50 to 29.00
Ordinary bundled sheet scrap.....	22.50 to 23.00
Heavy axle and tire turnings.....	20.50 to 21.00

Per Net Ton	
Iron angle bars.....	\$33.00 to \$33.50
Steel angle bars.....	27.00 to 27.50
Iron car axles.....	40.00 to 40.50
Steel car axles.....	40.00 to 40.50
Wrought arch bars and transoms.....	40.00 to 40.50
No. 1 railroad wrought.....	28.50 to 29.00
No. 2 railroad wrought.....	28.00 to 28.50
Railroad springs.....	28.50 to 29.00
Steel couplers and knuckles.....	29.50 to 30.00
Locomotive tires, 42 in. and over, smooth inside.....	36.00 to 36.50
No. 1 dealers' forge.....	26.00 to 26.50
Cast iron borings.....	15.00 to 15.50
No. 1 busheling.....	25.00 to 25.50
No. 1 boilers, cut to sheets and rings.....	22.00 to 22.50
No. 1 railroad cast scrap.....	25.50 to 26.00
Stove plate and light cast scrap.....	20.50 to 21.00
Railroad malleable.....	26.00 to 26.50
Agricultural malleable.....	25.00 to 25.50
Pipes and flues.....	23.00 to 23.50
Heavy railroad sheet and tank scrap.....	22.50 to 23.00
Railroad grate bars.....	20.00 to 20.50
Machine shop turnings.....	15.50 to 16.00
Country mixed scrap.....	19.00 to 19.50
Uncut railroad mixed scrap.....	23.50 to 24.00

San Francisco

SAN FRANCISCO, June 11.

Plans for expanding shipbuilding facilities about the bay region, many of which are being put into effect, will make this section one of the important consumers of steel and iron products. The Bethlehem Steel Corporation has announced the construction of the new shipbuilding plant adjoining the Alameda works of the corporation. The new yard will equal in capacity the size of the present plants combined. The Moore Shipbuilding plant is planning to add 10 new ways to its seven now completed or nearly so.

Bars.—All legitimate demands are being supplied by the local mills in the smaller dimensions, while the demand for larger bars not made on this coast is directly and indirectly entirely for Government work.

Structural Material.—Jobbers have a small supply of small shapes and angles on hand. The demand for these is almost exclusively for Government work. No large structural material is coming to the coast except for Government use.

Plates.—Jobbers are now trying to have their demands for stock given priority certificates in class B. They are watching every sale and refusing to sell except for use in Government work. Some shipments are arriving from time to time, but not enough to keep the stocks above the danger point.

Sheets.—The situation is similar to that in plates. Few shipments are arriving for jobbers, and they are holding their supply exclusively for Government use.

Wrought Pipe.—While occasionally a shipment goes to some line of business not directly connected with Government work, all sales are made to a preferred class of consumers, that is, to those lines which have been listed as essential.

Cast-Iron Pipe.—Some small lots amounting to a carload or less have been placed, but all municipal expansion is being held to a minimum.

Pig Iron.—The local foundries do not need pig as much as scrap, and none of them is suffering from a serious shortage.

Coke.—The users of coke who are working on Government contracts are getting enough to fill their contracts, but this is practically all that is reaching this center.

Old Material.—It is reported that some of the dealers and foundries have broken away from the agreement to handle material on the Government price. There is no doubt that the dealers and some of the foundries have but little cast-iron or steel scrap, and the temptation to bid up the price is great. It is said that certain dealers are paying the Government price for scrap and selling it to the foundries, on paper, at the same price. A cash bonus is then paid the dealer as his profit. These allegations have already been brought to the attention of the proper authorities. The present supply is not more than 50 or 60 per cent of the demand, and a considerable sympathy is expressed for the foundry which pays more and the dealer who accepts more than the stipulated legal amount. If a scrap commissioner could be appointed for this state, it is claimed the matter could be straightened out so that the dealers could have a reasonable profit and the foundries could get an equitable distribution of the supply. This matter of appointing a scrap commissioner for California has been put up to the American Iron and Steel Institute, but as yet no action has been taken. We quote: Heavy melting steel, per gross ton, \$29; No. 1 cast iron (cupola size), \$34; country mixed scrap, paid by dealers, \$22.

Buffalo

BUFFALO, June 17.

Pig Iron.—Business is following the course of the past two or three weeks, practically all shipments from furnaces being for Government work, although no priority permits have yet been issued to producers. It is expected that such permits will be furnished by the Director of Steel Supply as soon as complete list of replies to the questionnaire on uses to be made of iron is in hand and that preference lists will be furnished to shippers.

Furnaces are now operating at maximum capacity. Although demand keeps up and is pressing, no new business can be taken on. We continue the fixed price schedule as follows, f.o.b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$34.50
No. 2 X, 2.25 to 2.75 silicon.....	33.50
No. 3 foundry, 1.75 to 2.25 silicon.....	32.50
Gray forge	32.00
Malleable	33.50
Basic	32.00
Lake Superior charcoal, regular grades, f.o.b. Buffalo	37.50

Finished Iron and Steel.—It seems probable that about the only steel that will be available for the less essential purposes will be the "off heat" steel and the arbitrary discard shell steel. Even that material before it can be applied to any order must have the written consent of the Director of Steel Supply permitting shipment. There is quite a demand for discard steel; but sellers are disposed to retain it against a possible scrap famine. About 700 tons of reinforcing bars will be needed for the Buffalo plant of the National Aniline & Chemical Co. For the shipbuilding department of the Ferguson Steel & Iron Co., Buffalo, 1000 tons of structural steel will be required, to be fabricated by the Ferguson company at its present fabricating plant. The Williams Bridge Co., Syracuse, N. Y., has

the contract for an addition at the Dunkirk, N. Y., works of the American Locomotive Co.

Old Material.—There is a pronounced scarcity of heavy melting steel, all yards being practically bare of this commodity, with inquiries coming in for it in exceptionally large volume from all directions, the bulk from Pittsburgh and Youngstown districts. Dealers are unable to locate further supplies. All grades of scrap are in strong demand, with scarcity of supply. Reports are in circulation that prices in excess of the Government schedule are being offered by some dealers for shoveling machine shop turnings for open hearth use for delivery to Pittsburgh and Valley districts. The stringency in scrap materials, especially of heavy melting steel, leads some dealers to express the hope that the Government will take steps to bring the production of scrap under its own control, and that it will be done at once. The current schedule of prices is as follows, per gross ton, f.o.b., Buffalo:

Heavy melting steel.....	\$29.00
No. 1 low phosphorus, heavy, 0.04 and under..	39.00
Low phosphorus, 0.04 and under.....	36.50
Low phosphorus, not guaranteed.....	34.00
No. 1 railroad wrought.....	34.00
No. 1 railroad and machinery cast.....	34.00
Iron axles	\$44.00 to 46.00
Steel axles	44.00 to 46.00
Carwheels	29.00
Railroad malleable	34.00
Machine shop turnings.....	17.00 to 17.50
Heavy axle turnings.....	24.00
Clean cast borings.....	18.00 to 19.00
Iron rails	36.00 to 37.00
Locomotive grate bars.....	24.50 to 25.00
Stove plate	24.50 to 25.00
Wrought pipe	27.00 to 28.00
No. 1 busheling scrap.....	29.00 to 30.00
No. 2 busheling scrap.....	21.00 to 23.00
Bundled sheet stamping scrap.....	21.00 to 23.00

Philadelphia

PHILADELPHIA, June 18.

Pig Iron.—Steel plants have adjusted themselves to the conditions imposed by the resolution recently adopted by the War Industries Board and the American Iron and Steel Institute, but pig iron producers are without official notification of what to do, other than to follow the same course that they have followed for months. No priority certificates have been furnished to the blast furnaces, but H. G. Dalton and Leonard Peckitt of the committee on pig iron, ore and lake transportation continue to allocate iron, principally foundry grades, to furnaces for the benefit of industries that are engaged in war essentials. The Baldwin Locomotive Works and the Westinghouse Electric & Mfg. Co. are the latest plants in this district to obtain iron by this method. Some of the iron makers believe that orders for iron should be allocated to furnaces that have been supplying the consumers in normal times; in other words, that their output of iron should go to their own customers so far as the latter are entitled to it by virtue of essential work. It may be said that the officials of the War Industries Board have assured iron producers that it is their intention to allocate iron with the least possible disturbance to regular business. The status of so-called "less essentials" is not yet fixed, and the stove makers, in particular, are disturbed. Few consumers have yet been seriously affected by a shortage of iron, as it is believed the majority have anticipated a possible curtailment of shipments and have accumulated fair-sized stocks. Production of foundry iron is likely to show a decrease due to constant pressure from the Director of Steel Supply for more basic iron, and furnaces which make both basic and foundry are making more of the former than they usually do, with a consequent reduction in output of foundry iron. Leonard Peckitt, Empire Steel & Iron Co., who is in charge of low phosphorus iron production and distribution, has met with the eight producers of this grade, and plans have been formulated to prevent a shortage of such iron for essential requirements. It is stated that there will probably be no lack of low phosphorus iron for Government work, but consumers not employed on war material may be obliged to go without, and in fact are even now experiencing a shortage. New freight rates go into effect on June 25. The rate on pig

iron from Pittsburgh to Philadelphia will be \$3.70 per ton, instead of \$2.90; the rate from Birmingham, Ala., to eastern Pennsylvania, all rail, will be \$6.50 instead of \$5.20, as at present; the rate from southern Ohio, Hanging Rock and Ironton furnaces to this district will be \$5, instead of \$4. New rates from other iron shipping points will be as follows: Virginia furnaces, \$4.10; Punxsutawney, Pa., \$2.80; Catasauqua, Pa., \$1.10; Buffalo, \$3.90. Rates from other points will be proportionate, a flat advance of 25 per cent taking place, except that differentials will be maintained as heretofore, and all fractional rates are wiped out, 5c. and over becoming 10c. and less than 5c. being omitted. We quote standard grades of iron f.o.b. furnace, except Virginia iron, for which delivered prices are quoted:

Eastern Pennsylvania No. 1 X.....	\$34.50
Eastern Pennsylvania No. 2 X.....	33.50
Eastern Pennsylvania No. 2 foundry.....	33.00
Virginia No. 2 X (including freight).....	36.77
Virginia No. 2 foundry (including freight).....	36.27
Basic	32.00
Gray forge	32.00
Bessemer	35.20
Standard low phosphorus.....	53.00
Low phosphorus (copper bearing).....	50.00

Coal and Coke.—New freight rates on coal and coke from important shipping districts to Philadelphia and nearby points which take the same rate are as follows: Coke from Connellsville to Philadelphia, \$2.70 per net ton, present rate being \$2.10. Coal from the Pittsburgh district to Philadelphia, \$2.60 per gross ton, present rate \$2.15; Greensburg district, \$2.30, present rate \$1.85; Clearfield district, \$2.20, present rate \$1.75.

Ferroalloys.—The principal sale of ferromanganese during the past week was several hundred tons to the Cambria Steel Co., Johnstown, Pa. Otherwise the market is quiet, but prices remain firm at \$250, f.o.b. furnace, freight allowed. Spiegeleisen is not in active demand. Sellers continue to quote \$75, f.o.b. furnace, for delivery over the remainder of the year. The steamer Hendrik Lund, owned by E. J. Lavino & Co., which was engaged in the manganese-carrying trade, was sunk by a submarine on her way to Brazil.

Semi-finished Steel.—New freight rates on ingots, billets, slabs, etc., which take effect June 25, will be \$3.80 per gross ton from Pittsburgh to Philadelphia as compared with the present rate of \$3. The rate from Pittsburgh to New York will be \$4, compared with the present rate of \$3.20 per gross ton. We quote 4 x 4-in. open-hearth re-rolling billets at \$50.50, Philadelphia. After June 25 the delivered price here will be \$51.30.

Finished Iron and Steel.—With the addition of the tonnages of car steel allocated last week, steel mills are now pretty well filled up with orders for plates and shapes. The question of what disposition to make of off-heat ingots has been solved for steel plants for the present by the allocation of the car tonnage, much of which can be rolled from steel which could not be used for ships. The specifications for car steel permit the use of plates of less tensile strength than those used for shipbuilding. Fabricated steel is now arriving at the Hog Island shipyard of the American International Shipbuilding Corporation at almost a normal rate. The new freight rate, effective June 25, on finished steel from Pittsburgh to Philadelphia will be \$0.23 per 100 lb. on carload shipments and \$0.275 for less than carloads, as compared with \$0.185 and \$0.22, respectively, the rates at present. The carload rate from Pittsburgh to New York will be \$0.245, as compared with \$0.195, and the less than carload rate \$0.29, compared with the present rate of \$0.23. We quote plates at 3.25c.; shapes at 3c.; soft steel bars, 2.90c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5c.; No. 28 galvanized sheets, 6.25c., all Pittsburgh base, and bar iron, 3.685c., Philadelphia.

Old Material.—To prevent a possible shortage of iron and steel scrap, the Sub-Committee on Scrap Iron and Steel of the American Iron and Steel Institute and the American Board of Scrap Dealers are working together to locate scrap that should be brought to market. None of the mills is actually suffering from scrap shortage at present, but there are indications that it is becoming increasingly difficult to supply the

consumers with their normal requirements. Steel plants complain of the poor quality of scrap they are getting. Prices are without change, the maximum Government figures, plus the 3½ per cent commission, being paid in nearly all cases. The Sub-Committee on Scrap Iron and Steel held a meeting in Philadelphia on Monday to discuss prices for third quarter, as reported elsewhere in this issue. The new freight rates on scrap, effective June 25, will be \$3.60 per gross ton from New England points to Philadelphia; \$4.50 from New England to Pittsburgh district; \$3.80 from Philadelphia to Pittsburgh. We quote for delivery at buyer's yard, eastern Pennsylvania, as follows:

No. 1 heavy melting steel.....	\$29.00
Steel rails, re-rolling.....	34.00
No. 1 low phosphorus heavy 0.04 and under.....	39.00
Low phosphorus, 0.04 and under.....	36.50
Low phosphorus (not guaranteed).....	\$33.00 to 34.00
Old iron rails.....	39.00
Old carwheels.....	29.00
No. 1 railroad wrought.....	34.00
No. 1 yard wrought.....	33.00
Country yard wrought.....	29.00
No. 1 forge fire.....	26.00 to 27.00
Bundled skeleton.....	26.00 to 27.00
No. 1 busheling.....	31.00
No. 2 busheling.....	17.00 to 18.00
Turnings (for blast furnace use).....	17.50 to 18.00
Machine shop turnings (for rolling mill use).....	18.50 to 19.00
Cast borings (for blast furnace use).....	17.50 to 18.00
Cast borings (clean).....	19.00
No. 1 cast (for steel plant use).....	29.00
No. 1 cast (cupola sizes).....	33.00 to 34.00
Grate bars.....	24.00
Stove plate.....	24.00 to 25.00
Railroad malleable (for steel plants).....	28.00 to 29.00
Railroad malleable (for malleable works).....	31.00 to 32.00
Wrought iron and soft steel pipes and tubes (new specifications).....	33.00
Ungraded pipe.....	29.00

New York

NEW YORK, June 18.

Pig Iron.—Practically no new sales of pig iron are reported. Distribution of iron as produced is being carried on by the furnace companies with a view to preferring foundries on war work but without any use of new priority certificates. No additional rulings have come from Washington and it is not expected the situation will change in any radical way. A meeting of pig iron producers to be held at the Waldorf-Astoria, June 19, will decide on the attitude to be taken on pig iron prices in the conference with the War Industries Board at Washington on Friday, June 21. An advance in pig-iron prices is urged by a number of furnace companies in view of the freight advance on raw materials. Tennessee furnaces, it is understood, have appointed a committee to present their claims at Washington. The recent sale of Southern iron to the British Government has taken foundry iron from that section largely out of the market. There is a feeling on the part of some producers that unless the experience of those in the trade can be brought to bear on the problems of distribution, the new arrangement for Washington control may cause much friction. We quote as follows for tide-water delivery:

No. 1 X.....	\$35.25
No. 2 X.....	34.25
No. 2 plain.....	33.75
No. 1 Southern.....	\$39.75 to 40.25
No. 2 Southern (rail and water).....	39.00 to 39.25
No. 2 Southern (all rail).....	39.00 to 39.65
No. 2X Virginia.....	37.02

Ferroalloys.—The domestic ferromanganese market is very quiet but strong at \$250, delivered, for 70 per cent alloy plus \$4 per unit above this standard. Sales have been of only carload and small lots the past week and inquiries have been insignificant. Consumers seem well provided for as a result of the fairly heavy buying of the last few weeks. Imports of British 80 per cent alloy in May were well in excess of 3500 tons and were the largest for this year, while present indications are that June imports will be greater. This fact, coupled with the very large and record domestic output in May, makes the entire situation more comfortable than in some time. Spiegeleisen is strong at \$75, furnace, for 16 per cent alloy plus \$3.50 per unit above this level,

with demand considerably less than in some weeks and sales few. Ferrosilicon, 50 per cent, is unchanged at about \$150 per ton, delivered, on contract and up to about \$165 per ton for spot and prompt. Demand is not large. Some other ferroalloys, in which there are few market changes from week to week, are quoted in this paragraph in the first week of each month.

Finished Iron and Steel.—New work appearing in the structural field includes 600 tons for an addition to the bolt shop, Philadelphia Navy Yard, and 250 tons for three bridges for the Virginian Railway. The following work has been awarded: 700 tons at Baltimore for the Bartlett Hayward Co., to the Guerber Engineering Co.; 600 tons for the Quartermaster Department at Camp Perry, to be built out of stock by the Christopher & Simpson Iron Co., St. Louis; 500 tons for the power house at Langley Fields, to the Fort Pitt Bridge Works; 400 tons for the Chesapeake & Ohio, to the American Bridge Co.; 325 tons for eight bridges for the New York Central, divided among the Fort Pitt Bridge Works, Lewis F. Shoemaker & Co. and the Pacnix Bridge Co.; 200 tons for the American Locomotive Co. at Dunkirk, N. Y., to the Lackawanna Bridge Co. The following projects have also been closed: 300 tons for a power house at Jersey City for the Central Railroad of New Jersey; 500 tons at Detroit for the Michigan Brass & Copper Co.; 350 tons at Rahway, N. J., for the National Pneumatic Co., and between 1400 and 1500 tons for bridge work for the Pennsylvania Railroad. As noted elsewhere, the total amount of work taken by the bridge and building shops in May was about 108,000 tons, which is about 9000 tons above the average for the first four months of the year, but 4500 tons below the average for the first four months of 1917. With the new freight rate of 24.5c. per 100 lb., which will go into effect on June 25, we quote: Steel bars, 3.145c.; shapes, 3.245c.; plates, 3.495c., and bar iron, 3.745c., all New York. Out-of-store prices are 1c. higher.

Old Material.—There continues to be a good demand for all grades of scrap. Dealers are finding it more difficult to obtain the material than the orders. Foundries are buying cast iron scrap liberally because of difficulties in getting pig iron, presumably using a larger proportion of scrap in their mixtures than usual. We quote prices of brokers to New York producers and dealers as follows per gross ton, New York:

Per Gross Ton

Heavy melting steel.....	\$26.00 to \$26.50
Re-rolling rails	31.50
Relaying rails	60.00 to 70.00
Iron and steel car axles.....	44.00 to 44.30
No. 1 railroad wrought.....	31.50 to 31.80
No. 1 railroad wrought cut to not less than 10 in. or over 24 in.....	36.50
Wrought-iron track scrap.....	29.50
Forge fire	23.50 to 24.00
No. 1 yard wrought long.....	30.50
Light iron	10.00 to 11.00
Cast borings (clean).....	16.00 to 16.50
Machine-shop turnings	16.00 to 16.50
Mixed borings and turnings.....	15.50 to 16.00
Iron and steel pipe (1-in. minimum diameter), not under 2 ft. long....	30.00 to 30.50
Stove plate	22.50 to 23.00
Locomotive grate bars.....	22.00 to 22.50
Malleable cast (railroad).....	31.00 to 31.50
Old carwheels	26.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast.....	\$34.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	34.00
No. 1 heavy cast, not cupola size.....	29.00
No. 1 cast (radiators, cast boilers, etc.)	\$27.00 to 28.00

Cast-Iron Pipe.—Manufacturers are engaged for more than 50 per cent of capacity on Government work, so that private buying is indefinite as to delivery and dependent, of course, on the supply of pig iron available after direct and indirect war needs are satisfied. At the present time pipe for non-war enterprises can be delivered in six to eight weeks. The orders for Government use come from a variety of sources, in the aggregate involving a considerable tonnage. Government prices are as follows: \$61.35, New York, for 6-in. and heavier, and \$64.35 for 4-in.; \$71.35 for 3-in., with \$1 additional for Class A and gas pipe.

Cleveland

CLEVELAND, June 18.

Iron Ore.—The committee of independent ore producers appointed at the meeting held in Chicago last week to consider the ore situation in respect to attempting to secure higher prices is expected to meet with the Steel and Steel Products Committee of the American Iron & Steel Institute some time this week to present figures in support of their claims for an advance in ore prices. The efforts to secure this advance result from the increased freight rates, which fall upon the producers. While the advance is nominally 33.6c. per gross ton, it is more than that from some points to shipping ports and less from other properties to upper Lake docks. According to the tariffs that have been figured out by the United States railroad committee appointed to govern iron ore and grain traffic at upper Lake ports, the new rate from the Mesaba and Cuyuna ranges to loading ports is \$1 per gross ton, including handling and exclusive of the Government tax, as compared with 63.5c. at present, the advance thus being 36.5c. From the Gogebic and Menominee ranges the new rate is 80c. as compared with the present rate of 51c. or an advance of 29c. The ore movement is very heavy, and boats are now taking larger cargoes since a recent recommendation that the draft be increased 1 ft. It is expected that the June shipments will be well in excess of 9,000,000, tons. There is a labor shortage in many of the mines, and were men available the output would be increased considerably. We quote, f.o.b., lower Lake ports as follows:

Old range Bessemer, \$5.95; old range non-Bessemer, \$5.20; Mesaba Bessemer, \$5.70; Mesaba non-Bessemer, \$5.05.

Pig Iron.—Pig iron producers in the Cleveland territory with one exception are not waiting for more definite instructions from Washington regarding priority and preference lists and are shipping iron to their trade following as near as they can the evident spirit of the new Government regulations. In this they are guided materially by the replies to the questionnaire, showing what percentage of iron the consumer is using in Government and other war essential work. In filling orders consumers having the largest percentage of direct Government and other war essential work are being given first consideration. However, one Cleveland consumer has sent out notices to the trade that it will not make further shipments without priority certificates, and consumers affected are hurrying to secure these certificates. Some of the Southern producers are continuing to make shipments as iron is ordered. There are large stock piles in the South, and furnaces are anxious to keep the iron moving as fast as possible. Furnaces still have on their books considerable iron on high price contracts for the first half delivery taken before the Government price regulation. However, they claim they are not giving this consideration but are making shipments to consumers that need the material for essential work. Some consumers having little Government work are urging furnaces to hurry up shipments, hoping to get the iron into stock before more drastic regulations go in effect, and others are urging the furnaces to hurry shipments in order to get their iron before the increase in freight rates. It is expected that the replies to the questionnaire will all be in this week. J. L. Replogle, Director of Steel Supply, has sent an urgent request to furnaces that have not yet reported to get in their reports without further delay. Two Central Western furnaces have just secured the last of their reports from consumers, and one of these shows that 20 per cent of its iron, and the other only 16 per cent of its iron is going to non-essential industries. These final figures differ very slightly from estimates made by these furnaces recently when partial reports had been received. New demands for pig iron to be allocated by the Government are very heavy. These inquiries are piling up on the pig iron committee, and some large inquiries that have come out within the past two weeks have not yet resulted in the placing of the iron. A number of these inquiries are for Bessemer iron, which the committee is having trouble in placing, and inquiries last week

for 12,000 tons of low-phosphorus iron are still awaiting disposition. Government allocations in the week include 17,500 tons of basic for a Midland, Pa., plant for the remainder of the year and 8000 tons of basic for prompt shipment, 2000 tons each to plants in Pittsburgh, Chrome, N. J., Newport, Ky., and Erie, Pa., 800 tons of foundry iron for Chicago, and 700 tons of foundry iron for Providence, R. I. There is still pending a recent inquiry of 8400 tons of Bessemer iron for Midland, Pa., and 8000 tons of foundry iron for a locomotive company. The recent placing of car orders has resulted in an increase in the demand for malleable iron and new inquiries that came out for allocation include 23,000 tons of this grade. Other Government requests for allocation include several lots of basic aggregating 25,000 tons and 3000 tons of foundry iron. We quote, delivered, Cleveland, as follows:

Bessemer	\$36.15
Basic	33.30
Northern No. 2 foundry.....	33.30
Southern No. 2 foundry.....	37.00
Gray forge	32.30
Ohio silvery, 8 per cent silicon.....	47.40
Standard low phosphorus, Valley furnace.....	53.00

Old Material.—Dealers are awaiting an announcement on prices for the third quarter delivery, and few are attempting to make sales. Some of the trade look for higher prices because of higher freight rates, but the general feeling is that prices will not change except possibly on a very few items. Consumers of busheling scrap hope that prices for that grade will be reduced, as they claim that with the present price of busheling scrap there is little profit in making bar iron at the regulated price. Cupola cast scrap has remained well below the Government maximum, and the reduction in the price of that would not be surprising. The scarcity in heavy melting steel scrap continues and dealers could sell round tonnages were it available. A Cleveland blast furnace is reported to be offering \$19 plus commission for a round tonnage of borings and shop turnings. A Cleveland broker reports the sale of 2500 tons of low phosphorus melting scrap, 1500 tons of this for prompt shipment for delivery to a New England consumer. We quote delivered at consumers' yards in Cleveland and vicinity as follows:

Per Gross Ton	
Steel rails	\$27.00 to \$28.00
Steel rails, rerolling.....	34.00
Steel rails, under 3 ft.....	34.50
Iron rails	39.00
Iron car axles.....	46.50
Steel car axles.....	46.50
Heavy melting steel.....	29.00
Cast borings	18.00 to 18.50
Iron and steel turnings and drillings.....	18.25
No. 1 railroad wrought.....	34.00
Hydraulic compressed sheet scrap.....	28.00 to 29.00
Cast-iron car wheels, unbroken.....	29.00
Cast-iron car wheels, broken.....	34.00
Agricultural malleable	24.00 to 25.00
Railroad malleable	34.00
Steel axle turnings.....	24.00
Light bundled sheet scrap.....	24.50 to 25.00
Cast-iron scrap	29.00
Cast-iron scrap, broken to cupola size.....	31.00 to 31.50
No. 1 busheling.....	29.50 to 30.00

Per Net Ton	
Railroad grate bars.....	21.00 to 21.50
Stove plate	21.00 to 21.50

Coke.—There is a plentiful supply of by-product coke owing to the blowing out of one of the Cleveland blast furnaces, and the demand for this coke is fairly heavy. Foundries are well supplied at present, and are not buying much fuel for early shipment but are placing orders to stock up. This coke is being sold at the Government price of \$8.75 at oven, contracts specifying that the consumers will pay the highest price permissible on date of shipment. When the advanced freight rates go into effect an advance in the price of by-product coke will be made, corresponding to the increase in freight from the Connellsville district.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is very active. No large inquiries have come from the Government recently, but a large number of orders are being placed by car builders and other manufacturers doing war work. About 75 per cent of the output of the plants is being taken for Government uses directly and indirectly, so that there is still a limited supply for non-

essential requirements. Orders from the latter class of consumers are being taken subject to ability to fill. The new demand for rivets in small lots is fairly heavy, being practically all for Government work. The bulk of the output is going to the shipyards, and makers are keeping up fairly well on deliveries.

Finished Iron and Steel.—The steel trade has no further advices regarding the order placing the distribution of material under the Director of Steel Supply and the uncertainty regarding the matter has caused some mills to hold up orders until more definite instructions come out. Some producers are accepting only orders accompanied by priority certificates and others are taking orders for war essential work without these certificates. Some jobbers are accepting all the orders they can fill and others are requiring priority certificates. Consumers in some cases are being requested to go to Washington and secure allocations. New inquiry is light. The Government has allocated to the Carnegie Steel Co. 56,200 tons of hull steel for 38 boats recently placed with the American Shipbuilding Co. to be built at its Lorain and Detroit yards, but as yet a large tonnage for boats to be built at other yards of this company and in other Lake shipyards have not yet been placed. A Cleveland mill has been allocated 17,000 tons of plates for a Chicago territory car builder. The scarcity of steel for the commercial trade has caused some consumers to scour the market, even the scrap yards, for discard billets with a view of buying these and finding mills to roll them into required sections. There is an active demand for bar iron from car builders. Bolt manufacturers and other consumers are substituting iron for steel. Sheet manufacturers are taking no orders except accompanied by priority certificates and can make fairly good deliveries for Government work. Cleveland warehouses have made a 10c. advance on wire nails and other wire products.

We quote warehouse prices as follows: Steel bars, 4.03½c.; plates, 4.38½c.; structural material, 4.13½c.; No. 10 blue annealed sheets, 5.35c.; No. 28 black sheets, 6.35c.; No. 28 galvanized sheets, 7.60c.

White-Heart Malleable Castings

Essentials to the successful production of white-heart malleable castings were discussed recently by E. Adamson in a paper before the Staffordshire Iron and Steel Institute (British) in which he presented an interesting tabulation of the role played by the chemical composition, which is as follows:

	Silicon	Sulphur	Manganese	Total Carbon
Separation of graphite or free carbon is induced at a temperature which is lower	the higher the Si	the lower the S	the lower the Mn	the higher the total carbon
The rate of separation of graphitic carbon is less the lower the temperature and	the lower the Si	the higher the S	the higher the Mn	the lower the total carbon
Combined carbon corresponding to equilibrium at a given temperature diminishes with	increasing Si	lower S	lower Mn	higher total carbon

The author emphasized the fact that the separation of graphite carbon once induced will continue at lower temperatures and that graphite carbon begins to form in the molten iron. Hot metal, for a white iron casting, must therefore be retained in the ladle a minimum time and annealed carefully to prevent rapid precipitation of free carbon.

The facts noted in the column headed silicon were published in 1902 by Charpy and Grenet. The total carbon rarely amounts to less than 3 per cent; 2.75 per cent carbon is hard to anneal, but will be harder and stronger after a longer annealing at higher temperature. While it is possible to get good white-heart castings with sulphur as high as 0.25 per cent, the margin of safety in annealing is much greater if sulphur is much lower, say 0.05 per cent. A high sulphur under-annealed casting is brittle; over-annealed it will exfoliate. Manganese is not capable of masking the ill effects of sulphur in spite of oft-repeated statements to the contrary. Phosphorus is quite safe up to 0.25 per cent.

IRON AND INDUSTRIAL STOCKS

Quotations Are Generally Higher—Steel Corporation Pays Huge Excess Profits Tax

NEW YORK, June 17.

The increased effectiveness of Allied resistance to Germany's pressure on the Western front was reflected in a strengthening of practically all quotations the past week on stocks of steel-producing and metal-working companies. Announcement was made June 13 of the payment of \$233,465,000 by the United States Steel Corporation to meet its war excess profits tax. An interesting feature of the transaction was a saving of \$1,172,325 by the Steel Corporation through a 3 per cent discount for advanced payment of the tax, which was made the second week in April. The amount of money involved stands as the greatest single impost ever levied on an industry.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 32½-34½	Int. Har. of N. J. pf. 109½
Allis-Chalmers pf. 84½-85	Lackaw. Steel... 83 - 87½
Am. Can com... 44½-46½	Lake Supr. Corp. 15½-17½
Am. Can pf. 94 - 94½	Midvale Steel... 48 - 53
Am. Car & Fdry. com. 79¼-81½	Nat.-Acme 31
Am. Car & Fdry. pf. 109	Nat. Enam. & Stm. com. 51 - 52½
Am. Loco. com... 63 - 65½	Nat. Enam. & Stm. pf. 94½-97½
Am. Loco. pf. 97¼-98	N. Y. Air Brake. 125½-129
Am. Radiator pf. 235 - 240	Pressed Steel com. 61¼-65
Am. Ship com... 122 - 124½	Ry. Steel Spring com. 53 - 54½
Am. Ship pf. 86 - 90	Republic com... 84 - 91½
Am. Steel Fdries. 64 - 66½	Republic pf. 98½-100
Bald. Loco. com. 87 - 91½	Sloss com. 65 - 70½
Beth. Stl. Cl. B. 82 - 84½	Superior Steel... 39 - 42
Cambria Steel... 130 - 140	Sup. Steel 1st pf. 95
Chic. Pneu. Tool. 67½	Un. Alloy Steel.. 40 - 41
Colo. Fuel 48 - 50½	U. S. Pipe com... 14 - 14½
Cruc. Steel com. 61½-67	U. S. Pipe pf. 42½-44
Crucible Steel pf. 90¼-91	U. S. Steel com... 98½-103½
Deere & Co. pf. 91	U. S. Steel pf. 110½-112
Gen. Electric... 143 - 149	Va. I. C. & Coke. 71 - 73
Gt. No. Ore Cert. 32½-33½	Warwick 8 - 8½
Gulf States Steel. 84 - 84½	Westingh. Elec. 42 - 44½
Int. Har. of N. J. com. 128	

Report of Dominion Steel Corporation

Net profits of the Dominion Steel Corporation for the year ended March 31, last, after providing for depreciation, taxes, interest charges and the regular dividends on the preferred stock, amounted to \$7,601,660 as against \$8,571,165 for the previous year and \$3,015,225 two years ago—that is, there was a decrease of \$969,505 from the record breaking year 1916-17, but an increase of \$4,586,435 over the best previous performance of the corporation prior to that. Earnings were at the rate of \$23.68 a share on the \$32,097,000 common stock outstanding, as against \$26.71 the year before and \$9.39 two years before. Net earnings after the usual administration charges, taxes and depreciation were \$11,030,112, as against \$12,967,874 a year ago, a decrease of \$1,937,762. The fact that the decrease in the balance available for the common stock was nearly \$1,000,000 less is to be explained by a marked decrease in the deductions necessary for depreciation, interest and sinking funds, while the wiping out of the item of discount on securities sold a year ago eliminated an annual charge that had been varying from about \$100,000 to \$325,000. As to the decrease of \$1,937,762 in total net earnings it may be noted that the war tax provided for a year ago was the tax of the previous year, 1915-16, when earnings were relatively small, while the tax charged up this year is the tax for the record breaking year of 1916-17. The difference between the amounts appropriated for taxes in the two cases would go a long way toward explaining this year's decline in earnings. In general it could be said that there was little difference in the results of the two years, taxes apart. Last year the corporation appropriated nearly \$6,000,000 for writing off and a special reserve fund, leaving a little more than \$2,000,000 net to be added to the profit and loss balance. No special appropriations of the kind being necessary this year, the corporation, after paying 4½ per cent to shareholders of the common stock, or \$1,444,396 as

against 1 per cent or \$320,977 last year, had a clear balance of \$6,157,264 to carry forward. This, with the previous balance in profit and loss and the surplus carried forward from the constituent companies at the time of organization, brought the total in surplus account up to \$13,754,157.

As to the financial position in general the salient features are an addition of \$4,572,701 to working capital, now \$17,703,859 and an expenditure of \$2,435,073 on improvements to plants, accompanied by a reduction of \$960,588 in the funded debt of the corporation. Of the \$21,085,205 current assets, little more than a third is represented by inventories. Cash amounts to \$4,278,508; accounts receivable to \$5,335,886, and war loan investments to \$3,617,307. The last named item alone is more than an offset for the total floating debt of the corporation, namely \$3,381,346.

Mark Workman, in the course of his review as president, says in part: "The net additions during the year to the cost of properties amounted to \$2,435,073.35. The chief expenditures were upon the property of the Dominion Iron & Steel Co., and principally in respect to its mines at Wabana, its coke ovens and blast furnaces. Current and working assets, etc., have increased by \$5,638,809.61. Current liabilities have increased by the sum of \$1,066,107.97, due chiefly to the inclusion of estimates of work done by contractors previous to March 31, in excess of payments made at that date and to the increase in value of material in transit. The amount debited to deferred charges, \$493,914, is less than the corresponding amount appearing in last year's account and includes only such charges as are applicable to future operations. Funded and mortgage debts have been decreased by the sum of \$960,588.86."

Dividends

The Allis-Chalmers Mfg. Co., quarterly, 1½ per cent on the preferred and ¾ per cent on account of accumulated dividends, payable July 15.

The American Car & Foundry Co., quarterly, 2 per cent on the common and 1½ per cent on the preferred, payable July 1.

The American Steel Foundries, quarterly, 1½ per cent, payable June 29.

The Canadian General Electric Co., quarterly, 2 per cent, payable July 1.

The General Fireproofing Co., quarterly, 1½ per cent on the common and preferred, payable July 1.

The Otis Elevator Co., quarterly, 1½ per cent on the common and 1½ per cent on the preferred, payable July 15.

The Wheeling Steel & Iron Co., quarterly, 2 per cent, payable July 1.

The Youngstown Sheet & Tube Co., quarterly, 2 per cent and extra 3 per cent on the common and 1½ per cent on the preferred, payable July 1.

The American Brake Shoe & Foundry Co., quarterly, 1½ per cent on the common, 2 per cent and extra 1 per cent on the preferred, payable June 29.

The Billings & Spencer Co., quarterly, 75c. and extra 50c., payable July 1.

The Canadian Crocker-Wheeler Co., Ltd., 1½ per cent on the common and 1½ per cent on the preferred, payable June 29.

The Cleveland Automatic Machine Co., quarterly, 1½ per cent on the preferred, payable July 1.

The Empire Steel & Iron Co., 3 per cent and 2 per cent on account of accumulated dividends, payable July 1.

The Ingersoll-Rand Co., 3 per cent on the preferred, payable July 1.

The International Harvester Co. of New Jersey, quarterly, 1½ per cent on the common, payable July 15.

The National Enameling & Stamping Co., quarterly, 1½ per cent on the preferred, payable June 29.

The Safety Car Heat & Light Co., quarterly, 1½ per cent, payable July 1.

The Sloss-Sheffield Steel & Iron Co., 6 per cent on the common payable June 29, and quarterly 1½ per cent on the preferred, payable July 1.

The Standard Coupler Co., 4 per cent on the preferred, payable June 29.

The Underwood Typewriter Co., quarterly, 1½ per cent on the common and 1½ per cent on the preferred, payable Oct. 1.

The United States Cast Iron Pipe & Foundry Co., quarterly, 1½ per cent on the preferred, payable June 15.

The United Shoe Machinery Co., quarterly, 50c. and extra \$1 on the common, and 37½c. on the preferred, payable July 5.

Fannie furnace of M. A. Hanna & Co. at West Middlesex, Pa., was blown out for relining in the past week.

Metal Markets

The Week's Prices

		Cents Per Pound for Early Delivery					
		Copper, New York	Tin, New York	Lead		Spelter	
		Electro-lytic		New York	St. Louis	New York	St. Louis
June	Lake						
12.....	23.50	23.50	*90.00	7.37½	7.25	7.50	7.25
13.....	23.50	23.50	*90.00	7.50	7.37½	7.62½	7.37½
14.....	23.50	23.50	*90.00	7.50	7.37½	7.75	7.50
15.....	23.50	23.50	.....	7.50	7.37½	7.87½	7.62½
17.....	23.50	23.50	*90.00	7.82½	7.75	8.00	7.75
18.....	23.50	23.50	*90.00	7.82½	7.75	8.00	7.75

*Nominal.

The markets are generally quiet but strong. Demand for copper is heavy but fundamental conditions are unchanged. Tin is slightly easier but quite dull. Lead is very strong and higher. Spelter is fairly active and has advanced to higher levels. Antimony has also advanced.

New York

NEW YORK, June 19.

Copper.—The fact that the President has not yet officially announced the continuance of the 23.50c. price for copper from June 1 to Aug. 15, as arranged by the War Industries Board, coupled with the various rumors afloat and the evident dissatisfaction in the industry, is taken as an indication that something may transpire before Aug. 15 to change the price level upward. One strong argument advanced is that the change in freight rates will raise the copper cost 1c. per lb. An unconfirmed report is to the effect that not less than 90 per cent of production is being absorbed by the United States and its allies for war purposes. Demand is very strong and consumption is large. Refinery output in May was larger than April, with the average 1917 monthly rate now about reached.

Tin.—The market has been very quiet and dull the past week and only light sales have been made for July and August shipment and for September from the Far East. This has gone at about 81c. as compared with 82c. per lb. a week ago. There has been a fair inquiry for off-grade tin and some business in this has been done. More could have been sold had it been available. Just what effect the new freight rates are to have on tin prices and freights is not definitely known. Arrivals at Atlantic ports to June 14 inclusive, have been 465 tons, all from England. The New York Metal Exchange is also publishing arrivals at the Pacific Coast which are now very important and larger than ever before. To June 15 inclusive they have been about 2490 tons. From Eastern ports about 5000 tons are estimated afloat. The London market has not changed since last week, spot Straits having been quoted at £239 per ton yesterday.

Lead.—An advance on Monday of 57½ points in its New York quotation by the American Smelting & Refining Co., or from 7.25c. to 7.82½c. per lb. was considerable of a surprise. The independents have of course met this and the market is quoted strong at 7.75c., St. Louis, or 7.82½c., New York. Limited supplies continue to be the feature with prompt June and even July metal difficult to obtain. The desire by buyers to obtain shipments before the new freight rates take effect has been one strengthening influence.

Spelter.—On limited offerings and in a restricted market, spelter has continued to advance until yesterday prime Western for June and early July delivery was quoted at 7.75c. to 7.87½c., St. Louis, or 8c. to 8.12½c., New York, and third quarter at 8c., St. Louis, or 8.25c., New York. Only small sales are reported at these levels and the market is considered strong. For July alone 7.87½c. has been bid. For third quarter there does not seem to be much metal being offered nor was there much indication of free offerings for early delivery. A suggestion from C. E. Siebenthal of the U. S. Geological Survey, in his letter to smelters last

week, that certain interests limit their output of Grades C and D so as to bring the price of these grades more on a parity with that of Grade A created considerable interest in the trade. Opinion is diversified as to the exact meaning and the effect it may have.

Antimony.—The Government is reported to have again been a purchaser and there is a fair outside inquiry. The market is strong at 13.25c., New York, duty paid, for prompt and early delivery. It is not known yet just to what extent the new freight rates will affect prices since the metal is brought to the East from the Pacific Coast.

Aluminum.—Government maximum prices establish the market for No. 1 virgin metal, 98 to 99 per cent pure, at 33c. per lb. for 50 ton lots, 33.10c. per lb. for lots of 15 to 50 tons and 33.20c. per lb. for lots of 1 to 15 tons.

Old Metals.—The market is quiet and trading is light. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible.....	23.50
Copper, heavy and wire.....	23.50
Copper, light and bottoms.....	21.00 to 21.50
Brass, heavy.....	16.00 to 16.25
Brass, light.....	11.50 to 12.00
Heavy machine composition.....	24.25 to 24.75
No. 1 yellow rod brass turnings.....	13.00 to 13.50
No. 1 red brass or composition turnings.....	20.50 to 21.00
Lead, heavy.....	6.50 to 6.75
Lead, tea.....	5.50
Zinc.....	6.25

Chicago

JUNE 18.—Spot tin is scarce, but enough metal is coming along to keep consumers satisfied. The demand for copper is steady and large. Producers are having difficulty in filling contracts and are slow in shipping. Lead is stiff because of large inquiries for spot and a tendency to ship as much as possible before June 25, when the new freight rates become effective. Spelter and antimony are firm. We quote copper at 23.50c. for carloads and 24.67½c. less than carloads; tin, 95c. to \$1; lead, 7.75c. to 8c.; spelter, 7.75c. to 7.87½c.; antimony, 14c. to 15c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 21c.; copper clips, 21c.; copper bottoms, 19c.; red brass, 21c.; yellow brass, 14c.; lead pipe, 5.50c.; zinc, 5c.; pewter, No. 1, 55c.; tin foil, 65c.; block tin, 70c.

St. Louis

JUNE 17.—The market has been quiet but somewhat firmer the past week with lead in carload lots closing to-day at 7.62½c. for chemical and soft Missouri at 7.50c. to 7.75c. Spelter was firm at 7.50c. In less than carloads quotations were: Lead, 8.25c.; spelter, 8.50c.; tin, \$1.25, nominal; copper, 25.12½c.; antimony, 15c. In the Joplin district ore prices were well held, especially for top grades, which are still selling under the agreement at \$75 per ton, basis of 60 per cent, while second grades range down to \$50 per ton, with the weekly average at \$57.50. Calamine was quiet at \$28 to \$35 per ton, basis of 40 per cent, with the average for the week \$32. Lead ore was steady at \$85 per ton, basis 80 per cent, with the weekly average \$84. There were some reports of sales of high grade ore above the top price quoted. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 10c.; heavy yellow brass, 14c.; heavy red brass and light copper, 19.50c.; heavy copper and copper wire, 20c.; pewter, 30c.; tin foil, 60c.; lead, 5.50c.; tea lead, 5c.; zinc, 5c.

Crocker Brothers, 21 East Fortieth Street, New York, have been made sales agents for the Seaboard Steel & Manganese Corporation, and will handle its entire output of ferromanganese, spiegeleisen and other products. The Seaboard company is operating the Temple furnace at Temple, Pa., and will soon blow in a new furnace located adjacent to the present one. The new furnace was formerly one of the Breaker Island furnaces at Breaker Island, opposite Troy, N. Y., which was removed to Temple and entirely rebuilt.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on iron and steel articles, aside from wrought iron and steel pipe in carloads, per 100 lb., New York, 19.5c.; Philadelphia, 18.5c.; Boston, 21.5c.; Buffalo, 13.5c.; Cleveland, 13.5c.; Cincinnati, 18.5c.; Indianapolis, 20c.; Chicago, 21.5c.; St. Louis, 27c.; Kansas City, 47c.; minimum carload, 36,000 lb.; St. Paul, 40c.; minimum carload, 36,000 lb.; Denver, 79c.; minimum carload, 36,000 lb.; Omaha, 47c.; minimum carload, 36,000 lb.; New Orleans, 30.7c.; Birmingham, 46c.; Pacific Coast, \$1.00; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.05, minimum carload, 40,000 lb.; and \$1.00, minimum carload, 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 40c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 40c., minimum carload 46,000 lb.; to St. Paul, 35.5c., minimum carload 46,000 lb.; Denver, 79c., minimum carload 46,000 lb. A 3 per cent transportation tax now applies. On iron and steel items not noted above, rates vary somewhat, and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, 1/4 in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barb wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets, \$4.40 base
Large boiler rivets, \$4.50
7/16 in. x 6 in. smaller and shorter rivets, .50-10 per cent off list
Machine bolts h.p. nuts, 1/2 in. x 4 in.:
Smaller and shorter, rolled threads, .50-10-5 per cent off list
Cut threads, .50-5 per cent off list
Larger and longer sizes, .40-10 per cent off list
Machine bolts c.p.c. and t. nuts, 1/2 in. x 4 in.:
Smaller and shorter, .40-10 per cent off list
Larger and longer, .35-5 per cent off list
Carriage bolts, 1/2 in. x 5 in.:
Smaller and shorter, rolled threads, .50-5 per cent off list
Cut threads, .40-10 per cent off list
Larger and longer sizes, .40 per cent off list
Lag bolts, .50-10 per cent off list
Plow bolts, Nos. 1, 2, 3, .50 per cent off list
Hot pressed nuts, sq., blank, 2.50c. per lb. off list
Hot pressed nuts, hex., blank, 2.30c. per lb. off list
Hot pressed nuts, sq., tapped, 2.30c. per lb. off list
Hot pressed nuts, hex., tapped, 2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank, 2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped, 2.00c. per lb. off list
Semi-finished hex. nuts:
1/2 in. and larger, .60-10-10 per cent off list
9/16 in. and smaller, .70-5 per cent off list
Stove bolts, .70-10 per cent off list
Stove bolts, 2 1/2 per cent extra for bulk
Tire bolts, .60-10-5 per cent off list
The above discounts are from present lists now in effect.
All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4 1/2 in. and heavier, per 100 lb., \$3.90, in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.90. Boat spikes, \$5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., \$15 per package; 8-lb. coating, 1 C., \$15.30; 12-lb. coating, 1 C., \$17.00; 15-lb. coating, 1 C., \$18.00; 20-lb. coating, 1 C., \$19.60; 25-lb. coating, 1 C., \$20.60; 30-lb. coating, 1 C., \$21.75; 35-lb. coating, 1 C., \$22.75; 40-lb. coating, 1 C., \$24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill, and 4.50c. to 5c. from warehouse in small lots for prompt shipment. Refined iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld					
Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/2, 3/4 and 1	44	17 1/2	1/2 and 3/4	23	+4
1 1/2	48	33 1/2	3/4	24	+3
1 to 3	51	37 1/2	1 1/2	28	10
			3/4 to 1 1/2	33	17
Lap Weld					
2	44	31 1/2	1 1/4	18	3
2 1/2 to 6	47	34 1/2	1 1/2	25	11
7 to 12	44	30 1/2	2	26	12
13 and 14	34 1/2	..	2 1/2 to 6	28	15
15	32	..	7 to 12	25	12
Butt Weld, extra strong, plain ends					
1/2, 3/4 and 1	40	22 1/2	1/2, 3/4 and 1	22	5
1 1/2	45	32 1/2	3/4	27	14
1 to 1 1/2	49	36 1/2	1 to 1 1/2	33	18
2 to 3	50	37 1/2			
Lap Weld, extra strong, plain ends					
2	42	30 1/2	1 1/4	19	4
2 1/2 to 4	45	33 1/2	1 1/2	25	11
4 1/2 to 6	44	32 1/2	2	27	14
7 to 8	40	26 1/2	2 1/2 to 4	29	17
9 to 12	35	21 1/2	4 1/2 to 6	28	16
			7 to 8	20	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5 1/2 points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		Charcoal Iron	
3 1/2 to 4 1/2 in.	34	3 1/2 to 4 1/2 in.	12 1/2
2 1/2 to 3 1/2 in.	24	3 to 3 1/2 in.	+ 5
2 1/2 in.	17 1/2	2 1/2 to 2 3/4 in.	+ 7 1/2
1 1/2 to 2 in.	13	2 to 2 1/2 in.	+ 22 1/2
		1 1/2 to 1 1/2 in.	+ 35
Standard Commercial Seamless—Cold Drawn or Hot Rolled			
Per Net Ton		Per Net Ton	
1 in.	\$340	1 1/2 in.	\$220
1 1/4 in.	280	2 to 2 1/2 in.	190
1 1/2 in.	270	2 1/2 to 3 1/2 in.	180
1 3/4 in.	220	4 in.	200
		4 1/2 to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows, 30 days net or 2 per cent discount in 10 days:

Blue Annealed—Bessemer		Cents per lb.
No. 8 and heavier	.....	4.20
Nos. 9 and 10	.....	4.25
Nos. 11 and 12	.....	4.30
Nos. 13 and 14	.....	4.35
Nos. 15 and 16	.....	4.45
Box Annealed, One Pass Cold Rolled—Bessemer		
Nos. 17 to 21	.....	4.80
Nos. 22 and 24	.....	4.85
Nos. 25 and 26	.....	4.90
No. 27	.....	4.95
No. 28	.....	5.00
No. 29	.....	5.10
No. 30	.....	5.20
Galvanized Black Sheet Gage—Bessemer		
Nos. 10 and 11	.....	5.25
Nos. 12 and 14	.....	5.35
Nos. 15 and 16	.....	5.50
Nos. 17 to 21	.....	5.65
Nos. 22 and 24	.....	5.80
Nos. 25 and 26	.....	5.95
No. 27	.....	6.10
No. 28	.....	6.25
No. 29	.....	6.50
No. 30	.....	6.75
Tin-Mill Black Plate—Bessemer		
Nos. 15 and 16	.....	4.80
Nos. 17 to 21	.....	4.85
Nos. 22 to 24	.....	4.90
Nos. 25 and 27	.....	4.95
No. 28	.....	5.00
No. 29	.....	5.05
No. 30	.....	5.05
Nos. 30 1/2 and 31	.....	5.10

French Steel Industry in War Time

New Blast Furnace and Steel Works—Present and Post-War Problems—Enormous Expenditure of Ammunition—The Erosion of Guns—Electric Steel

THE new president of the Iron and Steel Institute, C. P. Eugène Schneider, delivered one of the most interesting and stimulating addresses in the history of the institute when it assembled for its spring meeting in London, May 2. Mr. Schneider is managing director of Schneider & Co., Le Creusot, France, home of the famous French 75s. The following abstract of his address is taken from the *London Iron and Coal Trades Review*:

President Schneider spoke of the importance of a closer fusion between scientists on the one hand and industrialists on the other, and called attention to the fact, illustrated forcibly in the war, that science and industrial technique are both growing ever more complex. It is increasingly difficult, he continued, even for an exceptionally endowed mind to store up, digest and finally use the mass of human knowledge contained to-day in one of the numerous branches that have sprung up on all sides out of the common stem formed by the discoveries of the scientists, engineers and industrialists of the later nineteenth century. Our engineers, scientists and members of our industrial staff have less and less the possibility of getting at the knowledge of facts by direct observation and thus apprehending them in their reality; they must often needs accept ready-made doctrines and live in a world of theory.

Industrial Production vs. Research

There lies the main danger, especially in a time such as the one we live in. The fate indeed of our industry depends on the right use of the human material we may have at our disposal, to the training of which we shall have to attend; and we must therefore solve, at the shortest notice, the most complex problems that have ever been set before man: I mean, we must discipline labor in both our countries so that our different industries at which war and the economic consequences of war have struck and will strike heavy blows may recover their balance with the shortest possible delay; while we make sure, in spite of that indispensable discipline and the extreme specialization it involves, that we are recruiting powerful individualities whose exertions are necessary to progress.

In that respect the iron industries form the basis of the gigantic fabric we are to rear; they are, so to say, the gage of industrial prosperity in a country, since, whenever industry expands, there is a demand for plant, and recourse is always had to metallurgy to develop plant. I may add that metallurgy is also the protecting shield that allows our two nations to resist the onslaught of German imperialism, and that it plays such an important part in the tremendous struggle that few people realize it exactly outside those who like yourselves are in familiar and everyday contact with the real facts.

It is certain that the expenditure of ammunition in

this war has exceeded all anticipations founded on comparisons with previous campaigns. Instead of the 20,000 gunshots with which Napoleon won the battle of Wagram, or the 1,500,000 shells that the siege of Sebastopol cost the Allies, we must fire to-day several million shells to drive the enemy a few miles back on a very narrow front. The table shows that the principal cause, apart from the difficulty of finding the range, of the present huge expenditure of shells, is that the increasing accuracy of our guns has not been sufficient to counterbalance the diminished vulnerability of the objects aimed at.

Our artillery engineers, left to their own inspiration, and confronted with this fact, have certainly been tempted to seek for the solution in an improvement in the accuracy of their guns. To a common-sense man it plainly appeared that to carry on such researches exclusively was out of season, and that we must provisionally admit, as a necessary fact, an expenditure of shells deemed until then impracticable, and find, in the use of improved methods of manufacture, the immediately indispensable resources. Accordingly, I resolved to build new metallurgical plants at Le Creusot and Caen, in order to produce a considerable tonnage of steel projectiles in the form of rolled bars, and of transforming directly all or part of the bars into nosed and heat-treated projectile blanks ranging from the 75 mm. caliber upward (370, 400, 520 mm.).

New Steel Works

Together with other French friends, we have built large blast furnaces and steel works equipped with 60-ton open-hearth furnaces. This effort has enabled us to provide our armies with the necessary projectiles, in spite of the enemy holding more than 70 per cent of our iron and steel works.

Erosion of Guns

A similar question is raised with regard to deterioration in the inner tubes of guns. The intense firing to which they are subjected more or less quickly erodes the junction cone and the grooves of rifling, so that the accuracy and range decrease in a continuous manner, and a gun is useless after firing from 10,000 to 2000 shots, according as it is a small or large caliber gun. The engineers and ballisticians have naturally sought to reduce the effects of deterioration by a study of the very complex causes, the temperature of combustion of the powder, the maximum pressure, the calibre, etc. But it is evident that knowing so little as we do about these things, the solution of the problem remains remote, and that had we managed, by laboratory experiments, to fix upon a quality of metal capable of withstanding the special erosion of guns, it was practically impossible to enable the guns in course of manufacture to benefit by the discovery. We therefore took for

Table Showing Destruction of an Infantry Shelter (on a Length of 20 Meters, or 65 Ft.)

	Franco-German War		Russo-Japanese War		Present War
Dates	1870		1904		1916
Description of shelter.	Park wall 2 m. (6 ft. 7 in.) in height		Earthwork parapet		Narrow trench
Fighting range	1500 m. (1640 yd.)		1500 m. (1640 yd.)		3000 m. (3280 yd.)
Guns used (calibers) ..	12 kg. (26.5 lb.) 4 kg. (8.8 lb.)		90 mm. (3 $\frac{11}{16}$ in.) 80 mm. (3 $\frac{1}{2}$ in.)		75 mm. (2 $\frac{3}{32}$ in.)
Probable vertical error	5 m. (16 ft. 5 in.) 6 m. 30 (20 ft. 9 in.)		1 m. 60 (5 ft. 6 in.) 2 m. (6 ft. 7 in.)		1 m. 60 (5 ft. 11 in.)
Number of shots to take effect on target.	28		80		40
Number of shots to fire after finding range..	280		200		2000
Weight of shells expended	3360 kg. (3.36 tons) 4200 kg. (4.20 tons)		1600 kg. (1.60 tons) 1900 kg. (1.90 tons)		11,500 kg. (11.5 tons)

Pieces of ordnance of 12 and 4 kg. caliber are of 1858 type (de la Hitte system).

Guns of 80 mm. and 90 mm. are of de Bange type; almost equivalent to the Arisaka material in use in Japanese army.

granted deterioration, and consequently provided for the manufacture of spare tubes of guns.

Does this mean that we systematically avoided research? Quite the reverse, but we began by tackling problems admitting of an immediate solution, so to say, and among the latter, above all, such as tended to increase production. I am convinced that such a policy will have to be pursued still more strictly after the war.

Special Open-Hearth Steel

So, with regard to metallurgy, we have built in France extremely powerful plants for the manufacture of pig iron or open-hearth steel. The Caen blast furnaces are to turn out, per unit, 464 tons per day, whereas, before the war, out of 123 such furnaces at work in France, but a few could turn out 250 tons. My new steel works at Breuil, near Le Creusot, are equipped with 60-ton open-hearth furnaces. Moreover, we are endeavoring to manufacture special high-grade acid open-hearth steel for aeroplane motors, and more generally for machinery intended to bear very high stresses, and the results hitherto attained show that success is ahead.

Hitherto the different operations in the rolling-mill department, and in particular the drafting of grooves on the rolls, had been left to the care of men of undoubted experience, but who were guided by empirical notions based a little on tradition and much on sentiment. The manufacture of projectiles showed us the benefit to be obtained by a thorough and, I may say, scientific study of the problem of hot-drawing of blanks or slabs. It is enough to say, for instance, that, with a properly selected speed of rolling, sections of dies, piercing punches, drawing rings and punches, we are able to draw in one heating the largest projectile [520 mm. (20 15/32 in.) Schneider mortar] and to use in the process half as much power as was formerly deemed necessary. To realize such a reduction of power in the rolling-mill department is, from an economic point of view, extremely interesting, but it is necessary to study methodically all the phenomena taking place during the various stages of rolling at the cogging mill and finishing mill.

Efficient Industrial Heating

Another problem of an industrial type destined to be solved by our skilled engineers is that of heating industrial furnaces and heating boilers. It is an extraordinary fact that the art of making a fire and turning it to a good use is still in its infancy, and that our heating apparatus is often very crude. A systematic study of steel furnaces will certainly lead to the remedying of many weaknesses in design and construction, so that we may control their working and be as sure of their temperature as a stoker is sure of the pressure in his boiler. The metallurgical works of the future must no longer afford the picturesque but regrettable sight still too frequent to-day of a crowd of chimneys all emitting an abundance of smoke.

The time is at hand when our works must yield their maximum useful effect, and therefore we should give all our attention to any loss, even those which formerly appeared negligible on account of their comparative smallness. Multiplied by the enormous tonnage of our future production they will form a considerable total. For instance, the mere recovery of waste oil in a vast metallurgical works may give rise to a not inconsiderable profit.

It behooves us to cast up the account of our resources in hydraulic power, so as to reserve for metallurgical purposes the greatest possible part of our coal production. Those resources may even now be easily appropriated for the traction of trains and trams, cars, lighting purposes, and the distribution of driving force over extensive zones, since a voltage of 60,000 is in use, and one of 120,000 will be so very soon. Whereas the waterfalls now utilized yield only from 700,000 to 800,000 hp., future plants should allow a yield, at low water, of a minimum of 4,500,000 hp. And as 1000 hydraulic hp. economize per year 10,000 tons of coal, in round figures, the saving to expect from those plants

will rise to 30,000,000 tons; that is to say, a figure approximating our total coal extraction before the war.

Hydraulic Power

Hydraulic power will in certain cases be directly utilized in our metallurgical works without previous electric transformation. Workshops turning out projectiles have already been equipped with hydraulic presses worked directly by water forced at high pressure through pipes. More powerful presses may be worked in a similar manner, and even rolling mills might be driven by high-pressure hydraulic turbines transmitting their energy, in the case of reversible mill engines, through the medium of a Föttinger transformer. May I recall here that a similar installation was realized by us several years ago at the Terni steel works for the manufacture of armor-plates (the power-transformer being electric). The electric blast furnace is not yet widely used in industry, but the development of electric furnaces destined to the production and refining of steel is certainly assured, especially in works using hydro-electric current as motive-power.

I carried out the following experiment, destined to show the importance of "dead stops" in modern forging operations. Two compressed-steel ingots weighing 21 tons each were selected as they came from the molds to be forged into three 220-mm. Schneider mortars and one 155-mm. Schneider howitzer. Particular attention was bestowed on the former through all forging operations; the latter was left to the current routine of the gunshop. Now, whereas it took 11½ days and seven heatings (plus one of annealing) to construct the former, for the latter 43 days and nine successive heatings (plus one of annealing) were necessary. The expenditure in fuel was therefore more considerable for the latter; but especially was there ample scope for "dead stops."

Reform in Internal Organization

These are entirely new vistas opening up before our engineers. Nor should they, on that account, forget the questions of internal organization, more immediate and more varied in their form. The immediate improvements capable of realization in a great number of ironworks must strike the unbiased visitor. It is seldom, indeed, that there is a perfect equipoise between the productiveness of furnaces and the output of forging machinery, presses or hammers. Still more seldom has the general topography of the workshop been attended to and the position of the various engines planned with a view of insuring a rational transit of the products through the different stages of their manufacture.

Rennerfelt Furnaces for the Philadelphia Mint

Hamilton & Hansell, Inc., Park Row Building, New York, have recently contracted to furnish the Government with two Rennerfelt electric furnaces to be installed at the United States Mint in Philadelphia, for melting bronze and cupro-nickel for coins. These furnaces will be equipped with overlap tilting and automatic side electrode feeding mechanism. Some time ago the mint in Philadelphia purchased a 1000-lb electric furnace. This furnace, together with all its electrical equipment, will be shipped to the Pacific coast and installed in the mint at San Francisco.

The National Forge & Tool Co. is abandoning its plant at Erie, Pa., and is moving the equipment to its other plant at Irvine, Pa. This change will increase the facilities possessed by the company for turning out forgings of all kinds as well as concentrating them at one point. In addition to the general offices at the plant, the company maintains a sales office at 502 Second National Bank Building, Pittsburgh.

The Boomer & Boschert Press Co., 329 West Water Street, Syracuse, N. Y., manufacturer of screw and hydraulic presses, has filed notice of change of company name to the Dunning & Boschert Press Co.

PERSONAL



ALLAN A. TEMPLETON

Allan A. Templeton, president Detroit Seamless Steel Tubes Co., and formerly president of the Detroit Board of Commerce, has been made director of industrial zone No. 8 by the War Industries Board. He will have general supervision over the manufacturing of munitions in the lower peninsula of Michigan. An industrial survey of all plants in the district has begun. At the present time Mr. Templeton is chairman of the Wayne County War board, and active in the Board of Commerce and the Employers' Association of Detroit.

W. Herman Greul, some years identified with the Otis Elevator Co., New York, has been made president of the Standard Plunger Elevator Co., Worcester, Mass. A large item in the production of this company is the Powell accelerating planing machine. Mr. Greul is a member of the American Society of Mechanical Engineers.

E. C. Smith, formerly with the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., has joined the sales force of the Matthew Addy Co., Cincinnati.

The Booth-Hail Co., Chicago, builder of electric furnaces for the melting and smelting of metals, has concluded arrangements with the Bradford-Ackerman Corporation, 30 East Forty-second Street, New York, to take charge of its sales in the Eastern section of the United States. Mr. Ackermann was formerly vice-president and general manager of the United States Light & Heat Corporation, Niagara Falls, N. Y., and Mr. Bradford was general sales manager of the same company. Both are electrical engineers.

Walter V. Turner, manager of engineering for the Westinghouse Air Brake Co., Wilmerding, Pa., has been given the degree of doctor of engineering by the University of Pittsburgh, in recognition of his services. He has more than 400 inventions in use on railroads.

George W. Hayden, former president Pratt & Cady Co., Hartford, Conn., has been commissioned major in the ordnance department and placed in charge of small arms production in New England. He was formerly connected with the Crane Co. and the United States Steel Corporation. Recently he has been directing the manufacture of motor trucks for overseas service at the Fiat Co., Poughkeepsie, N. Y.

Frank O. Hoagland has resigned as works manager of the Pratt & Whitney Co., Hartford, Conn., to accept a position as vice-president and works manager of the Bilton Machine Tool Co., Bridgeport, Conn. Mr. Hoagland was works manager of the Union Metallic Cartridge Co., Bridgeport, from 1908 to 1915, when he went with the Pratt & Whitney Co.

C. H. Vom Baur, well known in the electric furnace field, has been elected vice-president of the T. W. Price Engineering Co., Woolworth Building, New York, and 14 East Jackson Boulevard, Chicago. This company has designed and installed electric steel furnaces for the Ludlum Steel Co., Watervliet, N. Y., Hammond Steel Co., Syracuse, N. Y., Century Steel Co., Poughkeepsie, N. Y., Ulster Iron Works, Dover, N. J., Hubbard Steel Foundry Co., East Chicago, Ind., and others. Mr. Price was formerly vice-president and general manager of the Ludlum Electric Furnace Corporation. Mr. Vom Baur and Mr. Price have taken out a number of electric furnace patents and have stand-

ardized designs for sizes from 1 to 15 tons for melting and refining iron and steel, melting ferromanganese and making ferroalloys. The type evolved is known as the Vom Baur electric furnace. Due to the standardization of design and to an organization including 22 engineers, metallurgists, and others, complete electric furnace installations have recently been made in three months.

Lieut.-Col. Thomas C. Clarke, formerly manager of the Lehigh coke plant at Bethlehem, Pa., has received the Croix de Guerre for distinguished bravery in action in France, in penetrating the enemy's trenches for a half mile. Lieut.-Col. Clarke is an officer of the Thirty-fifth Division of the 110th Engineers.

Henry D. Tremper, who is shortly to go abroad again for the Federal Export Corporation, 42 Broadway, New York, has been tendered a dinner by his associates. He will visit France and Italy.

Following the commissioning as captain in the Quartermaster Department, U. S. A., of C. E. Carpenter, president Allied Machinery Co. de France, Messrs. Hartridge and McKay of the New York office of the Allied Machinery Co. of America are scheduled to sail for France in the next few days to confer with Captain Carpenter regarding the procedure to follow during the war's duration. They plan to return in three or four months.

I. Lamont Hughes, general superintendent of the Canadian Steel Corporation, Ojibway, Ont., a subsidiary of the United States Steel Corporation, has been appointed general superintendent of erection of the Neville Island plant of the ordnance department of the United States Steel Corporation. Mr. Hughes has assumed his new duties and has offices in the Union Arcade, Pittsburgh.

L. N. Ralph, formerly in the rail and billet division of the Carnegie Steel Co., Pittsburgh, under W. P. Seibert, has been appointed assistant treasurer and assistant secretary of the new ordnance department of the United States Steel Corporation at Pittsburgh.

D. P. Brown, formerly with Bryant Chucking Grinder Co., at Detroit, has become associated with the Hendey Machine Co., Torrington, Conn., and is in charge of its office, Chamber of Commerce Building, Rochester, N. Y.

Philip M. Guba, for some years in the cold rolled sales department of the Jones & Laughlin Steel Co. under Roland Gerry, has become New York district sales manager for the Donner Steel Co. with offices at 120 Broadway, New York.

Frederick R. Pettit, vice-president J. I. Case Plow Works, Racine, Wis., has been appointed chairman for Racine and Kenosha counties by August H. Vogel, Milwaukee, chairman of industrial district No. 17 of the War Industries Board for regional supervision of war work. The district embraces practically all of the state of Wisconsin, excepting northern counties.

Curtis C. Myers, professor of mechanical engineering, University of Cincinnati, has accepted a commission as captain in the Army Ordnance Department, and is now stationed at Buffalo.

Roger Taylor, having been appointed to the Ordnance Reserve Corps, is severing his connection with the engineering firm of Frederic deP. Hone & Co., 13 Park Row, New York, of which he has been a member since early 1916.

Mathias A. Beck, vice-president and chief engineer Milwaukee Electric Crane & Mfg. Co., Milwaukee, was elected president of the Engineers' Society of Milwaukee at the annual meeting and banquet held June 12. Other officers elected are: Vice-president, William M. White, manager and chief engineer hydraulic department, Allis-Chalmers Mfg. Co.; secretary, Fred H. Dorner, Jr.; treasurer, Albert Blatz, Jr.; directors, Louis E. Strothman, F. W. Ells and R. P. Kraft.

J. C. Kimes, formerly division freight agent of the Baltimore & Ohio Railroad at Pittsburgh, has been made traffic manager of the ordnance department of

the United States Steel Corporation, Union Arcade Building, Pittsburgh. Mr. Kimes will have charge of all traffic matters connected with the building of the new Neville Island plant at Pittsburgh for the manufacture of guns and shells.

Robert J. Anderson, who has been Government resident chemist at Youngstown, Ohio, attached to the Government laboratories of the Youngstown Sheet & Tube Co., has been transferred to the Bureau of Aircraft Production and is now located in Pittsburgh at the general laboratories of the signal corps.

J. W. Dixon, salesman in the offices of E. W. Mudge & Co., Frick Building, Pittsburgh, has become associated with the War Industries Board under J. L. Replogle, Director of Steel Supply. Mr. Dixon still retains his connection with E. W. Mudge & Co.

H. M. Wilson, secretary of the Shenango Furnace Co., Pittsburgh, who has been seriously ill with pneumonia for some weeks, is slowly recovering.

The firm name of Freyn & Co., engineers and contractors, 643 People's Gas Building, Chicago, has been changed to Freyn, Brassert & Co. H. J. Freyn is president and treasurer; H. A. Brassert is consulting engineer; C. D. Rawstorne, vice-president, and F. H. Wilcox, secretary.

Arthur H. Young, director of the American Museum of Safety, 14 West Twenty-fourth Street, New York, will relinquish his present duties July 1 to organize and become director of a department of industrial relations of the International Harvester Co., Chicago. His efforts will be directed to overcome the tendency toward diminished personal interest and contact between workmen and the management.

F. T. Llewellyn, who has been identified for some years with the New York office of the Carnegie Steel Co., has joined the United States Shipping Board in the requirements division.

M. C. Robbins, who recently acquired control of the *Gas Age* and Brown's Directory of American Gas Companies, was tendered a luncheon at the Engineers' Club, New York, June 12, by his associates of the Iron Age Publishing Co., of which he was general manager, to mark in a formal way the termination of his IRON AGE connection and to signalize his entering the publishing business on his own account.

B. E. LaFollette, who has had charge of the engineering, sales and advertising departments of the Clarage Fan Co., Kalamazoo, Mich., has resigned to go into Government service July 1. He will be located either in Philadelphia or Washington as an engineer with the requirements division of the United States Shipping Board.

Charles F. Michael, of the Ohio Locomotive Crane Co., is president of a building company which manufacturers in Bucyrus, Ohio, affiliated with the Employers' Association of that city, have organized. F. W. Hudson, of the Ohio Steel Foundry, is vice-president, and R. O. Perrott, of the American Clay Machinery Co., is secretary.

Prof. G. A. Roush, assistant professor of metallurgy, Lehigh University, Bethlehem, Pa., has been appointed supervisor of training, inspection division, Ordnance Department. He will have charge of the training of inspectors, recently instituted by the War Department.

Forest Rutherford, consulting metallurgist, New York, has been appointed a member of the advisory committee in non-ferrous metals to the United States Tariff Commission.

John N. Coffin, former assistant secretary-treasurer of the Tennessee Coal, Iron & Railroad Co., has been called to Washington as assistant manager of the requirements section of the Emergency Fleet Corporation.

W. J. Long, of Bessemer, Ala., has been elected president of the National Steel Products Co., which has completed its organization.

A. F. Scherer, district sales manager Whitaker-Glessner Co. at Cincinnati, has resigned to accept a position as production supervisor in the Army Ordnance Department with headquarters in Cincinnati. D. O. Rice, formerly in the Cleveland office, will have

charge of the Whitaker-Glessner Co.'s Cincinnati office during Mr. Scherer's absence in the service.

H. H. Roberts, Jr., son of H. H. Roberts, Philadelphia manager of THE IRON AGE, is now in France. He is an ordnance sergeant, having been advanced to this grade 60 days after enlistment. He is regarded as a motor expert and while at Houston, Tex., was an instructor on machine guns.

OBITUARY

HENRY FAIRBANKS, for many years vice-president of E. & T. Fairbanks & Co., manufacturers of scales, died at his home in St. Johnsbury, Vt., June 8. After his graduation from Dartmouth College in 1853, and Andover Theological Seminary in 1857, Mr. Fairbanks was ordained a minister of the Congregational Church. He preached for three years, and then went to Dartmouth as professor of natural history and natural philosophy from 1860 to 1868, when he became associated with the company founded by his father, Thaddeus Fairbanks, later serving as director and vice-president until his retirement from active business life a few years ago. He was 88 years old.

HERMAN H. KLUSMAN, Cincinnati, treasurer of the J. R. Wood Supply Co., and prominent in machine tool circles, died suddenly of apoplexy, June 4, aged 54 years. Until about four years ago, Mr. Klusman was vice-president of the Greaves-Klusman Machine Tool Co., maker of lathes. In partnership with William A. Greaves, the Greaves-Klusman Machine Co. was formed in 1889 for the manufacture of wood-working machinery. Ten years later, the concern moved to the Camp Washington district and engaged exclusively in the manufacture of lathes.

FRANK E. BRIGHTMAN, general superintendent of the Brightman Nut & Mfg. Co., Sandusky, Ohio, died May 30, aged 53 years. He was formerly associated with the forging department of the Westinghouse Machine Co., Pittsburgh.

JOSEPH GOODMAN, president Goodman Engine & Machine Co., Pittsburgh, died at his home in the East End, that city, June 5. He was considered an authority on glass making machinery.

The New Freight Schedules

The iron and steel trade has discovered that the "joker" in the schedule of freight rate advances, effective June 25, is a clause which abolishes all fractional rates. All advances which figure out at five cents or more become 10 cents, and those below five cents are wiped out. To illustrate: The present rate from the Mesaba iron range to Duluth and Superior on iron ore is 63.5 cents per gross ton. The advance adds 33.6 cents to this rate, making the total 97.1 cents. Under the ruling of the Director-General of Railroads this automatically becomes \$1. Thus the advance on ore moving from the Mesaba range to Duluth and Superior is actually 36.5 cents instead of 33.6 cents. Had the advance figured out, say, 94.1 cents, instead of 97.1 cents, the rate would have gone automatically to 90 cents.

This decision of the Railroad Administration to do away with fractional rates is a measure that the railroads had sought for many years, but without success. In its application it is likely to cause many disruptions of the present differentials between competing points or between roads. At first the railroads will apply a straight 25 per cent increase to all rates, and later the matter of maintaining the established differentials will be worked out. For example, there is an established differential of 20 cents per ton between Philadelphia and New York on shipments from Pittsburgh. It so happens that the new rates work out in such a way as to maintain this differential on semi-finished steel; but in many instances this will not prove true, and considerable adjustment of rates will be necessary before matters are finally shaped up for all shipping points.

DULUTH AS STEEL BASING POINT

Adverse Action by Steel Men—Federal Trade Commission Appeal

The Committee on Steel and Steel Products of the American Iron and Steel Institute, headed by E. H. Gary, chairman of the United States Steel Corporation, following its meeting with independent ore producers in Chicago on June 11, went to Duluth, Minn., where a meeting was held with the Duluth Chamber of Commerce and other commercial interests of that city. Two points were brought out by the Duluth representatives, one being the establishment of Duluth as a basing point for finished steel prices and the other the fostering and increase of steel manufacture in that city. On the first an adverse ruling was made by the committee, and in respect to the second several disadvantages of Duluth as a steel-making center were pointed out. The chief argument for more steel activity in Duluth was its proximity to great sources of iron ore supply.

Among the handicaps to the steel industry in Duluth were pointed out climatic conditions, the necessity of long hauls of fuel and other supplies, and the fact that the city is not centrally situated in regard to markets. Thus the proposal involved going away from both market and fuel supply to make steel.

At the conclusion of the conference a representative of the Duluth Chamber of Commerce stated that the question of establishing Duluth as a basing point, thereby promoting its expansion as a steel center, would be laid before the Federal Trade Commission, to obtain the judgment of a third disinterested party, and the co-operation of the steel men was hoped for. The opposing attitude of the steel committee, he said, was a keen disappointment to the Duluth people.

Chairman Gary's Comments

In part Judge Gary said, speaking for the committee: "We do not control the entire steel situation. We do not fix the price of our product. That is being done by the United States Government. As to basing points, they should not be changed during the period of the war, it has been decided by the War Industries Board." In answer to a statement that Duluth has been promised that it would be made a basing point, as well as given a great steel mill, Mr. Gary said the Steel Corporation had fulfilled its promise as to the steel plant, as it did with all promises. As head of the corporation he could vouch for that. Of the promise regarding a basing point he knew nothing, though he said certain gentlemen might have expressed opinions as to what could be done. The steel plant is in the service of the Government and is making shell steel. While he would congratulate Minnesota on having great ore deposits, he also would congratulate it because capital came from other States to utilize and develop the ore fields. In the ground the ore was worth only 25 to 50 cents a ton. To Minnesota had been paid last year over \$8,000,000 in taxes because of its ore beds. The Steel Corporation last year paid \$4,000,000 to people working in Duluth, and had expended \$3,000,000 otherwise there. Therefore it was improper to say nothing has been done for Duluth; also wrong to say that either party had a right to extraordinary consideration.

The speaker declared that Pittsburgh had become a basing point because it was regarded as having the best location. Mills are always built where fuel and other necessities are most easily procurable. "As other localities developed and saw the prosperity the steel industry had brought to Pittsburgh, they decided they too wanted to become basing points. Cleveland, Chicago, New Castle, Birmingham wanted this. The officials of these cities investigated thoroughly and found they could not compete with Pittsburgh. In any case, they saw that it is just as desirable to have one basing point as to have a gold standard." The point of the whole argument, he added, had been lost sight of. It is not a question of prices between the producer and the consumer, but a question of benefits between the producer

and the community. Other steel plants might be established at Duluth, he said, but they would not come unless guaranteed protection, and that lay in the Pittsburgh price plus.

Speaking further, Mr. Gary said that the Steel Corporation did not build in Indiana because it had any particular love for Indiana, but because it was a business proposition. "It is true the Steel Corporation has made considerable money in the past few years, but not an unreasonable amount, considering the size of its investments. Up to the past four years the corporation barely averaged 7 per cent on its capital. We are constantly investing in new enterprises, constantly raising wages, so the money goes right back into the business. It is my opinion, but it is not a promise, that if patience is exercised by Duluth, if you wait for the development of this country, the time may come when these mills and more like them may be utilized to the further advantage of this community. Do you think we shall throw away money which can be used for our benefit, that means your benefit as well?"

It was intimated by one of the Chamber of Commerce speakers that it was in appreciation of the promises said to have been given Duluth that the city brought its strength to bear against a legislative proposal that ore taken from the State should be taxed, and it was this Mr. Gary apparently had in mind when speaking of the benefits which Minnesota had derived from its ore.

Data opposing the proposal at issue were presented by E. A. S. Clarke, John A. Topping, J. G. Butler, Jr., and Willis L. King.

Pittsburgh and Nearby Districts

The monthly meeting of the Pittsburgh section of the Association of Iron and Steel Electrical Engineers will be held in the Hotel Chatham on Saturday evening, June 22. A paper on "Electric Welding" is to be presented by H. L. Uhland, power and mining engineering department, General Electric Co., Schenectady, N. Y.

Government officials last week seized the plant of the Orenstein-Arthur Koppel Co., at Koppel, Pa., about 25 miles from Pittsburgh. More than a dozen officials and employees were put under arrest and are likely to be interned during the period of the war. The company manufactures mining cars, portable railroad tracks and other special equipment. The plant is now being operated under the direction of the Department of Justice.

Molders and core-makers employed in union foundries in the Pittsburgh district have received an advance of 75c per day. However, only a few foundries in the Pittsburgh district sign labor scales, there being 33 open-shop and non-union foundries in that district. These foundries gave their employees a large advance in wages last fall and made a contract with them at that time for one year which is still in force.

The Equitable Gas Co., the Allegheny Heating Co., and the Monongahela Natural Gas Co. have notified domestic consumers in the Pittsburgh district of an advance in prices of natural gas from 27½c to 35c per 1000 cu. ft.

At present the Carnegie Steel Co. is operating 55 of its 59 blast furnaces. The four idle stacks are two Edgar Thomson at Bessemer, which are being raised above flood stage, relined and repaired; one Clairton stack which is being relined and repaired, and Zanesville stack, which has not been operated for several years. Receipts of coke are reported ample to meet requirements, and the company expects to blow in the two Edgar Thomson and the Clairton stacks as soon as they are ready.

The Hydraulic Drawn Forge Co., Ellwood City, Pa., which has succeeded the Solid Drawn Forging Co., has secured a large contract from the Government for shells, and will extend its plant in order to take care of the order. The company is employing about 200 men at present, and will employ a much larger force when the addition to its plant is finished.

LESS CHROME ORE IMPORTS

Shipping to Be Saved and Shipments from Near By to Be Increased

WASHINGTON, June 18.—The first important step in the conservation of shipping in accordance with the principle upon which the Foster mineral control bill is based has been taken by the War Trade Board, which by a proclamation effective June 15 has imposed restrictions upon the importation of chrome ore and chromite. The board is making a careful study of the situation with respect to other minerals, including the most important of the steel hardening metals, and additional proclamations are expected.

The War Industries Board has decided that it is entirely practicable to curtail importations of manganese, chromite, tungsten and other ores to such an extent as to save a large tonnage of shipping for use in transporting troops and war material to France, at the same time stimulating the development of domestic deposits of these materials. The proclamation of the War Trade Board relative to the curtailment of the importation of chrome ore and chromite is as follows:

In pursuance of the general policy of tonnage conservation, the War Trade Board has introduced restrictions upon the importation of chrome ore and chromite from overseas. The sources of home supply are numerous, and are believed to be capable of extensive development. To provide for interim demands, pending the further development of such deposits, imports from Cuba, Guatemala, Newfoundland and Brazil by sea will be permitted, not exceeding 43,500 tons up to March 31, 1919, and from New Caledonia up to 10,000 tons prior to Dec. 31, 1918. Shipments overland or by lake from Canada, overland from Mexico, or as return cargo from European ports when coming from convenient ports and not involving delays in loading, will be permitted. All outstanding licenses for the import of chrome ore and chromite for overseas have been revoked as to shipments made after June 15, 1918.

A statement has been prepared by the Bureau of Mines giving details of imports and domestic production of chrome ore in recent years. The uses specified in the statement are for making ferrochrome used in chrome steel for armor plates, armor piercing projectiles, high-speed steel cutting tools, airplane motors and especially automobiles; making refractory brick for blast furnaces and making chemicals for paints, dyes and leather tanning. The domestic production of chrome ore and chromite, which had not reached 600 tons in any year before 1915, was 3281 tons in that year, 47,035 tons in 1916 and 42,682 tons in 1917. The imports were 115,945 tons in 1916 and 72,063 tons in 1917. The percentages of imports in 1917 were 59 from Rhodesia, 26 from Canada, 14 from New Caledonia and 1 per cent from other sources.

McClintic-Marshall Co. New Plants

The McClintic-Marshall Co., now operating fabricating steel plants at Rankin, Leetsdale and Carnegie, Pa., near Pittsburgh, also at Pottstown, Pa., will build, on request of the United States Government, two new fabricating plants for ship material, one to be located at Leetsdale and the other at Pottstown. Each will have a capacity for fabricating 1000 tons of ship material per month, and the company hopes to have both in operation by Jan. 1 next. The main building at each plant will be 320 x 600-ft. with receiving yards and runways at one end of each building, and shipping yards and runways at the other end of each building. Each plant will require from 50 to 60 cranes and hoists, of 5 to 20 tons capacity, and contracts for a good part of the crane and hoist equipment have already been placed. The Government has furnished the company priority orders for the buildings and the equipment, and there will be as little delay as possible in deliveries on these. When the two new shops have been completed, the McClintic-Marshall Co. will be able to fabricate close to 40,000 tons of ship and other material per month, making it much the largest independent fabricating concern in the country.

SURVEY OF SCRAP SITUATION

Sub-Committee Conducting One to Determine Whether Shortage Is in Prospect

Acting on behalf of the War Industries Board, W. Vernon Phillips of Philadelphia, chairman of the sub-committee on scrap iron and steel of the American Iron and Steel Institute, is conducting a survey of the scrap situation throughout the country to determine whether an acute shortage is in prospect, and to procure information on all available scrap that has not yet reached the market.

A circular letter is being mailed to members of the American Board of Scrap Dealers, which reads as follows:

At the request of the Director of Steel Supply of the War Industries Board, the chairman of this committee is addressing all members of your board, asking them to co-operate with the Government for the purpose of locating and reporting to this office all lots of unprepared scrap which are being withheld from the market, principally in the form of obsolete railways, old mine heads and tipples which are not being operated; unused bridges, or similar structures; old manufacturing plants not in operation; contractors' equipment and similar material which should be shipped to the scrap yards for preparation.

Please have, not only your office, but your correspondents in various parts of the country report with as full particulars as possible, endeavoring in every case to get the name of the owner, court or trustee having charge.

Please report all instances on a sheet of the size and in the form prescribed herewith, in order that we may tabulate them properly.

We are also inclosing a list of questions, which please answer for the guidance of the Government in determining the present shortage or condition of scrap.

Every dealer is asked to answer fully the following questions:

1. How much scrap of all sorts you have on hand at the present time? (irrespective of the amount sold, and should not include any material en route). (Make separate report for each yard.)
2. How much scrap had you on hand June 1, 1917? (Figures should represent as nearly as possible the total tonnage of all grades of iron and steel irrespective of the amount sold, and should not include any material en route.)
3. Are you operating your plant to its fullest capacity?

In reporting on old material, which can be reclaimed, the dealers are asked to give the location of the material, estimated tonnage, form and character of material, names of owners or trustees, its availability for shipment, name of nearest railroad, distance from nearest scrap yard, name of nearest scrap yard, and such other information as may be available.

When the sub-committee has collected all of this information the facts will be presented to the War Industries Board, which will take some action toward condemning the scrap and starting it into channels where it will reach consumers. At present there is no shortage of scrap, but the view of the sub-committee is that a shortage may develop in the fall or winter unless means are taken to avert it. In Germany old lamp posts, door knobs and every other form of material that could be converted into steel was commandeered, and if the war continues for long it is possible that a country-wide campaign may be inaugurated here to collect scrap. This is not an immediate prospect, but the sub-committee has several other plans under consideration to be applied if an acute shortage develops.

Lebanon Steel Foundry Adds Another Heroult

The Lebanon Steel Foundry has contracted for the installation of its second 2-ton Heroult electric furnace. A large annex is being built, 100 x 200 ft., and sufficient annealing ovens added to handle the increase output of electric steel castings.

The Hugo Burghheim Co., Cincinnati, has removed its offices from the Gerke Building in that city to its yards at Latonia, Ky. Hugo Burghheim is president. The company has lately added considerable equipment.

Machinery Markets and News of the Works

LIST OUT FOR GUN PLANT

Midvale's Requirements Made Known

Steel Corporation Also Issues Tentative Inquiry for Shell-Making Tools

The Midvale Steel & Ordnance Co., Philadelphia, has issued lists of 120 large machine tools and 27 electric cranes for its new Nicetown gun plant, which will manufacture 16-in. howitzers. The United States Steel Corporation has sent out a tentative inquiry for machine tools sufficient to manufacture 1500 12, 14 and 16-in. shells per day.

Progress is being made on other ordnance projects, notably the shell plant which the Symington interests will build in Chicago. The Symington Forge Co. has placed an order for 18 cranes for the forge shop. Machine tools will be bought by the A. R. Williams Co., Buffalo. The United States Ammunition Co. has taken over the former Fiat automobile factory at Poughkeepsie, N. Y., and will equip it for making 9.2 and 6-in. shells. Most of the equipment will be brought from Canadian shell factories. A number of new shell contracts may be placed in the East, but will not involve the construction of new buildings.

The United States is placing shell orders in Canada. Lyalls, Ltd., Montreal, Que., has begun the erection of a new plant for 155-mm. shells, and orders for equipment have been placed. Carson Brothers, Montreal, will also erect a new plant for 155-mm. shells.

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., will buy a great deal of equipment—cranes, fabricating machinery, machine tools, etc.—for a new shipyard at Alameda, Cal., which will build troop ships of 25,000-ton displacement. A similar yard may be constructed in the East, but the matter is in abeyance

for the present. The New York Shipbuilding Corporation, Camden, N. J., is placing orders for complete equipment for several new shops and shipways involved in the large expansion of its plant. This new capacity will also be devoted to the building of troop ships.

Expansion of fabricating plants is producing new business for crane and machinery builders. The McClintic-Marshall Co., Pittsburgh, is buying heavily for the additions to its Pottstown and Rankin, Pa., plants. More than 50 cranes have been purchased. Lewis F. Shoemaker & Co. have bought a 23-acre site at Pottstown, Pa., for an addition to its fabricating plant. The Standard Steel Car Co. and the Pressed Steel Car Co. have taken larger orders for fabricated steel for ships, and are adding to their equipment.

Railroad buying has not assumed large proportions, but a number of roads are filling a part of their requirements, notably the Central Railroad of New Jersey, which bought last week. The New York Central list is still pending. Inquiries are out from the Chicago, Burlington & Quincy and Pennsylvania Lines West, while the Baltimore & Ohio is expected to buy machines soon for its new locomotive shop at Glenwood, Pa.

The American Car & Foundry Co. has placed orders for equipment for its car shops. The Bartlett Hayward Co., Baltimore, Md., is adding to its shell and fuse-making equipment. The Grant Motor Car Corporation, Cleveland, has ordered about \$200,000 of tools. The Templar Motors Corporation, Cleveland, is reported to have obtained a contract for 155 mm. shells.

There is considerable miscellaneous business, the demand being heaviest for large tools and cranes. Crane inquiry is perhaps the greatest ever known in the history of the industry. Details may be noted in the various market reports.

New York

NEW YORK, June 18.

Business continues very active in some lines, demand for large tools for shipbuilding and gun-making being the principal features of present machine-tool trade in the East. In the smaller tools the inquiry is mainly for lots of one to three or four machines.

The largest inquiry now before the tool builders and dealers of New York and Philadelphia is that of the Midvale Steel & Ordnance Co. for the equipment of its new gun plant at Nicetown, Pa. About 120 large tools are called for, as follows: 16 turning lathes, eight planers, six slotters, nine shapers, seven boring and turning mills, 15 grinders, 10 drills, radial, upright and sensitive; 16 milling machines, four horizontal boring mills, 19 special machines and a single turret lathe. This is understood to be only a partial list of the Midvale company's tool requirements for making 16-in. howitzers. It is inquiring also for 27 electric cranes as follows: Five 100-ton, one 75-ton, eight 50-ton, one 30-ton, three 25-ton, eight 10-ton and one 5-ton.

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., will proceed at once with the construction of a new shipyard at Alameda, Cal., on San Francisco Bay. The new yard will be known as the Liberty plant. As previously reported, this yard will have its own fabricating, machine, forge and boiler

shops, for the making of all ship equipment. Orders may be placed within a week for traveling and locomotive cranes. The list of cranes, totaling nearly 100, has been revised as follows: Eight 5-ton, 64-ft. span; eight 10-ton, 64-ft. span; one 25-ton, 47-ft. span; two 5-ton, 47-ft. span; six 30-ton, with 5-ton auxiliaries, 64-ft. span; one 50-ton, with 10-ton auxiliary, 64-ft. span; two 25-ton, with 5-ton auxiliaries, 64-ft. span; one 20-ton, with 5-ton auxiliary, 64-ft. span, these all being standard bridge cranes. Gantry cranes are wanted as follows: Four 5-ton, 64-ft. span, and 4 10-ton, same span, double-leg, and three 15-ton, 64-ft. span, and two 10-ton, 50-ft. span, single-leg. About 30 tower whirley cranes and about 20 locomotive cranes will also be required. Orders will be placed soon for about 100 machines for the plate and angle shop, and lists of machine tools and other equipment will be issued subsequently.

The New York Shipbuilding Corporation, Camden, N. J., is placing orders for a large quantity of tools and other equipment for the extension of its shipyard. The Pawling & Harnischfeger Co., Milwaukee, has received an additional order for eight 10- and 15-ton traveling cranes, making 26 that this company now has on order for the Camden shipyard. The inquiry of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., for equipping a new plant at Richmond, Va., to manufacture reciprocating engines and boilers, is still pending, but action is expected this week. A large list of cranes is included. The Westinghouse Electric & Mfg. Co., Lester, Pa., has issued a list of about 50 tools, including 29

large radial drills, for an addition to its plant, which is at work on ship-propelling machinery.

The Symington Forge Co., Rochester, N. Y., has awarded an order for 18 cranes, five of 25-ton and 13 of 10-ton capacity, to the Chesapeake Iron Works, Baltimore, Md., for a new forge shop to be built for shell work in Chicago. Forging equipment is also being ordered. The Symington Machine Corporation will build a machine shop for machining these forgings, and is inquiring in the East for tools. As reported in these columns last week, these new plants will be capable of turning out 10,000 shells per day.

The American Car & Foundry Co. has been a large buyer in the past week, having placed orders for several large planers, bolt and forging machines and other equipment for the various car shops, which are working on 30,000 cars for the Railroad Administration.

The United States Ammunition Co., Poughkeepsie, N. Y., has taken over the former Fiat automobile factory and will equip it for the manufacture of 9.2-in. and 6-in. shells. A large number of the tools will be brought from Canada, the company being owned by Canadian capital.

Railroad buying has not materialized in the East as rapidly as was expected. The Central Railroad of New Jersey, however, has closed on its recent list, its purchases, so far as known, totaling about \$75,000 or more. A list of fabricating machines and tools for the Baltimore & Ohio locomotive shop at Glenwood, Pa., is expected this week. The Pennsylvania Railroad is inquiring for eight 100-ton cranes, presumably for a locomotive shop. Bids close this week. These cranes are to be of 87-ft. 9-in. span and equipped with two 15-ton auxiliary hoists.

The Bartlett Hayward Co., Baltimore, Md., is extending its ordnance shops and has bought new equipment, including a large number of turret lathes and screw machines. The Chesapeake Iron Works, Baltimore, was last week awarded an order for four traveling cranes, two of 10-ton and two of 15-ton capacity.

The American Condenser & Engineering Co., Singer Building, New York, has occupied the old Lozier automobile factory at Plattsburg, N. Y., where condensers for ships will be made. The company is buying additional equipment.

The Washington and Norfolk Navy yards are buying additional equipment for shops.

Several small machine shops have taken subcontracts from the Wright-Martin Aircraft Corporation and have bought a few tools each.

Radial drills have been advanced 15 per cent by the leading manufacturers.

The crane business is more active than in many months. In addition to the inquiries now before the trade, as reported in preceding paragraphs, there are many small inquiries. The Chickasaw Shipbuilding Co., Mobile, Ala., has awarded an order for 10 tower whirley cranes for shipways to the Alliance Machine Co., Alliance, Ohio. These cranes will operate on traveling gantries over the shipways and are of 5-ton capacity at 50-ft. radius and 16-ton at 20-ft. radius. The New Britain Machine Co., New Britain, Conn., has ordered a 5-ton and a 10-ton crane from the Northern Engineering Works, Detroit. This works has also sold to the American International Shipbuilding Corporation, Philadelphia, two 10-ton cranes and a 10-ton crane to the Vulcan Iron Works, Jersey City, N. J. The War Department has awarded 11 10-ton cranes to the Pawling & Harnischfeger Co., Milwaukee, and two 75-ton cranes to the Toledo Bridge & Crane Co., Toledo, Ohio. The Cleveland Crane & Engineering Co., Wickliffe, Ohio, has sold the Guerber Engineering Co., Bethlehem, Pa., a 10-ton crane and the J. G. Brill Co., Philadelphia, a 20-ton crane. The New York Shipbuilding Corporation, Camden, N. J., is inquiring for four cranes as follows: One 80-ton, double-trolley, 142-ft. span and 120-ft. lift; one 10-ton, 30-ft. span; one 15-ton, 45-ft. span, and one 5-ton, 45-ft. span. The General Electric Co., West Lynn, Mass., wants a 20-ton gantry, with 5-ton auxiliary, 85-ft. span, or an overhead 20-ton crane, same span. The Industrial Materials Co., 50 Pine Street, New York, is inquiring for 48 cranes for export to Norway. Twenty are to be of 1½-ton and 25 of 2½ to 5-ton and three of 30-ton capacity. Most of these are of the walking jib type. The Downey Shipbuilding Corporation, New York, is asking for bids on a 35-ton crane, 62-ft. span. The Bureau of Yards and Docks, Navy Department, is receiving bids on two 10-ton and four 7½-ton cranes for airplane storehouses at Brooklyn. Westinghouse Church Kerr & Co., New York, want a 15-ton, 3-motor crane, 76-ft. 6-in. span, for the Rutland Railroad.

The Meindel Car Co., New York, has been incorporated with a capital of \$50,000 by L. McKee, A. W. Barber and G. W. Sessions, 34 Nassau Street, to manufacture railroad cars.

The Vulcan Sheet Metal & Mfg. Co., 45 Fulton Street,

New York, has been organized to operate a sheet-metal works. C. A. Quirk is vice-president and general manager.

The Bronxco Wheel Co., New York, has been incorporated with a capital of \$10,000 by D. J. Barrett, W. F. Wahrenberger and J. Digiacomo, 2304 Prospect Avenue, to manufacture demountable wheels for automobiles.

The K. & K. Tool & Machine Co., Inc., 432 East Seventy-first Street, New York, has increased its capital from \$3,000 to \$100,000.

The Hawes Foundry & Equipment Co., Brooklyn, has been incorporated with a capital of \$100,000 to manufacture steel, aluminum and composition castings. A. J. and W. G. Hawes, 1921 Newkirk Avenue, and E. E. Rosenblume, 46 Graham Avenue, are the incorporators.

The New York Electric Welding Corporation, New York, and the Brooklyn Electric Welding Corporation, Brooklyn, have been incorporated with capitals of \$25,000 and \$50,000, respectively, to operate welding and machine works. H. B. Payne and J. B. Morris, 764 Court Street, Brooklyn, are the incorporators.

The Sterling Fastener Co., 255 Fifth Avenue, New York, manufacturer of metal fasteners, with factory on East Seventy-first Street, has increased its capital from \$10,000 to \$150,000.

Owen A. Rogers, Bloomfield, N. J., operating a machine shop at 150 Bloomfield Avenue, has had plans prepared for a one-story and basement addition, 60 x 115 ft.

The Nugo Device Corporation, Lyndhurst, N. J., has been incorporated with a capital of \$20,000 by Hugo Neu, Benjamin Stamper and Ludwig Blaba, to manufacture safety locks for automobiles.

The Oliver Loading Co., Old Bridge, N. J., manufacturer of ammunition, has resumed operations after a two-week shut-down to make changes in the machinery.

The Adirondack Steel Foundries Corporation, Colonie, N. Y., has been incorporated with a capital of \$1,000,000 by J. S. Y. Ivins, 521 Mercer Street, H. M. McClaughry, 54 Bertha Street, and W. G. Van Loon, 100 State Street, Albany.

The Concrete Ship & Barge Co., Newark, has been incorporated with a capital of \$100,000 by S. H. Smart, Ernest Woltman and H. R. Waller, New York, and C. M. Sexton, 191 South Clinton Street.

The Essex Foundry, Murray Street and Avenue D, Newark, manufacturer of cast-iron pipe, etc., has filed plans for improvements to cost about \$5,500.

The Public Service Railway Co., Terminal Building, Newark, has taken bids for a one-story car repair shop, 50 x 160 ft., at Bloomfield Avenue and Lake Street.

The American Cooperage Co., Newark, has been incorporated with a capital of \$100,000 by Jerome Lehman, Isaac Cohen and George Strekel to manufacture barrels, etc.

A two-story nitrating works, 56 x 126 ft., to cost \$33,000 will be erected by the Maas & Waldstein Co., at its plant, Avenue R and the Passaic River, Newark. It will also build a new two-story addition, 29 x 56 ft., to cost \$10,000.

The Central Plating Co., Newark, has been organized to operate a works at 10 Oliver Street. Max Ruhlmann, 148 Bowers Street, Jersey City, heads the company.

The Submarine Boat Corporation, Newark, has been incorporated with a capital of \$4,000,000 by Robert Walmsley, Brooklyn, and J. F. Sandefur, New York. Harry M. Lloyd, Newark Bay Shipyard, is representative.

The Star Electric Motor Co., 245 New Jersey Railroad Avenue, Newark, has arranged for the erection of a one-story brick plant at New Jersey Railroad Avenue, Miller and King streets, to cost about \$25,000.

The Atlas Valve Co., Newark, has been incorporated with a capital of \$250,000 by Charles Jones, Irma Klopheus and Edwin J. C. Joerg.

The Main Auto Radiator Co., Newark, has filed notice of organization to operate a works at 393 Washington Street, for the manufacture of radiators, etc. John Wilder and Herman Ritz, Derby, Conn., head the company.

The Brady Brass Co., 170 Fourteenth Street, Jersey City, will build an addition to cost about \$20,000.

The Remacle-Hummel Gear & Machine Works, 21 Rose Street, New York, incorporated about two months ago, is already making arrangements to enlarge its plant within the next two weeks. L. L. Remacle, president, was formerly president of the Remacle Gear Cutting Co., Canal Street, and F. H. Hummel, vice-president, was president of the Hummel Machine Shop.

The Dobbins Core Drill Co., 110 West Forty-second Street, New York, has just received a Government contract for the manufacture of drills for use in France, and has orders

on hand for the remainder of the year. Frank W. Severn is president, Edward I. Ball, secretary and Michael F. Helfgott, treasurer. Following the recent reorganization of the company, Mr. Severn, then vice-president, was elected president. Messrs. Ball and Helfgott are attorneys of Brooklyn.

The G. S. Green Co., 74 Warren Street, New York, manufacturer of heavy hardware, has increased its capital from \$25,000 to \$100,000.

The Westinghouse Electric & Mfg. Co., Pittsburgh, has purchased the property, business and good-will of the Krantz Mfg. Co., Brooklyn, N. Y., manufacturer of safety and semi-safety electrical and other devices, such as auto-lock switches, distribution panels, switchboards, floor boxes, bushings, etc. The supply department of the Westinghouse Electric & Mfg. Co. will act as exclusive sales agent for the products of the Krantz Mfg. Co., whose business will be continued under its present name. H. G. Hoke, of the Westinghouse Electric & Mfg. Co., will represent the supply department at the Krantz factory.

The Lincoln Tool & Die Co., 410 Elm Street, Arlington, N. J., which established about three months ago a plant for the manufacture of tools, dies, jigs and fixtures for aeroplane production for the Government, will now build an extension, 40 x 50 ft. A. Gillen is president; Mrs. Jessie Gillen, secretary, and George Gilley, treasurer.

The Long Island Railroad, Pennsylvania Terminal, New York, is considering the construction of a one-story addition, 40 x 100 ft., to its engine repair works, Newtown Creek section, Long Island City, to cost \$15,000.

The Docton Motor Ship Co., New York, has been incorporated with a capital of \$320,000 by L. E. Brown, R. J. M. Bullowa and E. T. Wrack, 17 Battery Place, to manufacture motor boats and vessels.

The Crawford Machine Tool Co., New York, has been incorporated with a capital of \$10,000 by G. Gillette, W. L. Bunnell and A. Chessin, 157 West 123rd Street, to manufacture machine tools.

The Hoffmann Motor Car Co., 336 Avenue B, New York, manufacturer of motor cars, parts, etc., has increased its capital from \$10,000 to \$100,000.

The Erie Railroad, 50 Church Street, New York, is planning an addition to its repair shop and engine house at Hornell, N. Y.

Edward Weck & Son, 148 Fulton Street, New York, have been incorporated with a capital of \$80,000 by M. C., H. D. and Edward Weck to manufacture cutlery, etc.

The Federal Snap Fastener Corporation, New York, has been incorporated with a capital of \$100,000 by S. Basch, A. Chapel and M. T. Dannreuther, 409 Edgecomb Avenue, to manufacture metal fasteners, etc.

The American Numbering Machine Co., 224 Shepherd Avenue, Brooklyn, will make interior improvements in its two-story plant to cost about \$6,000.

Paul M. Marko & Co., 1191 Bedford Avenue, Brooklyn, manufacturers of storage batteries, have increased their capital from \$50,000 to \$75,000.

The Curtiss Aeroplane Co., Mineola, L. I., has awarded a contract to the J. W. Cooper Co., Fidelity Building, Buffalo, for the construction of a new one-story brick and steel plant, 100 x 250 ft., to cost \$35,000.

The Westcott Chuck Co., 54 East Walnut Street, Oneida, N. Y., manufacturer of machine chucks, has increased its capital from \$150,000 to \$200,000.

The Atwood Machine Co., 95 Madison Avenue, New York, manufacturer of machinery, with works at Stonington, Conn., a New Jersey corporation, has increased its capital from \$300,000 to \$1,200,000.

The Brown-Ferrier Co., Moorestown, N. J., has been incorporated with a capital of \$100,000 under Delaware laws to manufacture engineering tools, etc. George B. and Thomas A. Ferrier, Moorestown; and Harry S. Brown, Boston, are the incorporators.

The Board of Freeholders, Freehold, N. J., will receive bids up to 11 a. m., July 3, for the construction of a new electric power plant for county hospital use, including machinery and auxiliary apparatus. Warren H. Conover, 114 Liberty Street, New York, is architect. Charles H. Wyckoff is director.

The Lehigh & New England Railroad, Sussex, N. J., has awarded a contract to Fairbanks, Morse & Co., 30 Church Street, New York, for a reinforced-concrete coaling station to cost \$40,000. The installation will include coal-handling machinery. The company is also planning the construction of new engine houses, shops, etc., to make this a division headquarters.

The Marine Properties, Inc., Brooklyn, has been incorporated with a capital of \$1,000,000 to construct and operate a shipbuilding plant. Wallace R. Foster, Brooklyn; Paul S.

Smith, and Arthur W. Britton, 28 Nassau Street, New York, are the incorporators.

The Manhattan Sheet & Iron Works, New York, has leased property at 1729 First Avenue for a new shop.

The Standard Gasoline & Oil Separation Corporation, New York, has been incorporated with a capital of \$150,000 by O. A. Glassberg, H. S. Osterwell, 35 Nassau Street; and H. Roth, 225 Fifth Avenue, to manufacture oil separators.

Miller & Van Winkle, 18 Bridge Street, Brooklyn, manufacturers of steel springs, have increased their capital from \$150,000 to \$300,000.

The Contractors' Machinery & Export Co., New York, has been incorporated with a capital of \$100,000 to manufacture engines, boilers, machine shops and foundry equipment. J. N. Morton, 1918 Avenue N, Brooklyn, and W. Catlin, 3569 Broadway, New York, are the incorporators.

A new electric power plant will be constructed at the institute group of buildings to be erected by the New York Board of Inebriety, 300 Mulberry Street, at Warwick, N. Y. The structures are estimated to cost \$200,000. Sylvan S. Levy is president. Chauncey Matlock, 30 East Forty-second Street, New York, is electrical engineer.

A one-story power plant to cost \$40,000 will be erected by the Nucoa Butter Co., Fourth Street, Bayonne, N. J., at its works on Avenue A.

The Southern Cotton Oil Co., 160 East Twenty-second Street, Bayonne, N. J., will build a three-story reinforced-concrete plant at East Twenty-second Street and Central Avenue, to cost about \$75,000, exclusive of machinery. Headquarters of the company are at 120 Broadway, New York.

The International Oxygen Co., 796 Frelinghuysen Avenue, Newark, has filed plans for a one-story brick forge shop.

The Lafayette Tool & Die Works, at 93 Lafayette Street, Newark, has filed notice of organization. Carl Fassberger, 123 Avon Avenue, and Stephen Frank, 444 South Sixteenth Street, head the company.

The Meurer Steel Barrel Co., 575 Flushing Avenue, Brooklyn, has awarded contract to Peter Guthy, 926 Broadway, Brooklyn, for additional work to rebuild its one and two-story plant, 200 x 250 ft., at Third and Oliver streets, Long Island City, recently destroyed by fire, to include a new steel barrel shop, 75 x 100 ft.

The Apex Valve Corporation, New York, has been incorporated with a capital of \$10,000 by N. M. Jensen, H. Franzred and W. E. Shore, New Brighton, to manufacture valves and similar products.

The Three Unit Engineering Corporation, New York, has been incorporated with a capital of \$100,000 by W. F. Meyers, M. and A. Simons, 2139 Daly Avenue, to manufacture engines, boilers, etc.

E. Leitz, Inc., 30 East Eighteenth Street, New York, manufacturer of microscopes and similar specialties, has increased its capital from \$50,000 to \$100,000.

Irving Lipshitz, machinist, will open a new machine shop at 385 Sixth Avenue, New York.

Musa Brothers & Co., New York, have been incorporated with a capital of \$10,000 by P. Mastroianni and A. L. Musa, 129 Wadsworth Avenue, to manufacture airplanes.

The Magee Steam Specialty Corporation, New York, has been incorporated with a capital of \$50,000 by S. Solomon, J. Gallo and G. Goldstein, 4 West 103rd Street, to manufacture steam heating equipment.

The Orange Lamp & Radiator Works, 472 Main Street, East Orange, N. J., has been organized to operate a machine and repair works. Floyd Krebs, 357 Camden Street, and Herman Flamm, 311 Tremont Avenue, are the proprietors.

Buffalo

BUFFALO, June 17.

A two-story machine shop to cost about \$10,000 is being built by the Buffalo Dry Dock Co., at its shipyard at Ganson Street and the Buffalo River, Buffalo.

Bids are being taken for a machine shop, 60 x 200 ft., three stories, of reinforced concrete, to be erected on Winston Road, Rochester, by the Bridgeford Machine Tool Works.

The Geneva Cutlery Co., Lehigh Street, Geneva, N. Y., has been incorporated with a capital of \$2,600,000 by D. H. and L. H. Henry and W. Althoff.

A new three-story brick and steel machine shop to cost about \$85,000 will be constructed by the National Aniline & Chemical Co., Buffalo, at its plant on Abbott Road. It is also having plans prepared for an eight-story addition to its works, 200 x 200 ft.

The Turbine Engineering Corporation, Buffalo, has been incorporated with a capital of \$100,000 by C. J. Bush, A. L. Vickery and J. A. Carmon, Buffalo, to manufacture turbine machinery.

The Buffalo General Electric Co., Electric Building, Buffalo, has filed plans for a one-story electric power station, 100 x 100 ft., to cost \$25,000.

The Ferguson Steel & Iron Co., 1399 Bailey Avenue, Buffalo, has filed plans of a one-story mold shop extension, 50 x 200 ft., on Stanley Street.

The Killington Machine Co., Syracuse, N. Y., has been incorporated with a capital of \$10,000 by A. M. Longway, W. W. Washburn, and D. A. Lapham, Syracuse, to manufacture machinery.

The Velox Vise Co., Carthage, N. Y., has increased its capital to \$35,000.

The Cross Brothers Co., Rochester, N. Y., has been incorporated, with a capital of \$225,000, by F. H., C. W. and W. H. Cross, to manufacture belting, machinery supplies, etc.

New England

BOSTON, June 15.

Virtually no change in conditions in the machine tool business has taken place for several weeks. New England manufacturers are participating in the contracts for equipment for munitions plants outside of this district but very little business of major size is originating in New England at this time. Confirmation of the report of an embargo against an increase of war orders in this section makes it practically certain that there will be very little plant enlargement for months to come. It is certain, though, that every available factory in this territory will be kept busy on essential war work, so that it is expected that orders for balancing machine equipment or for replacement of worn machinery will continue to feature the local business.

Machinery jobbers are finding it very difficult to place any orders for stock, except for a few lines of small machine tools. To just what extent this will be a limiting factor on war work is not yet clear, but it is obvious that production must suffer some if the many small manufacturers in New England have to wait for factory delivery instead of being able to pick up tool room equipment and other essential machinery from local warehouse stocks.

In most respects it can be said that the various troubles that have attended the adjustment of production to war necessities have ceased to be a factor and the steady hum of industry is now rarely subject to interruption. Transportation difficulties still feature industrial life in this section and labor is constantly becoming scarcer. In spite of these handicaps the output of the factories is constantly increasing.

The S. K. F. Ball Bearing Co., Hartford, Conn., has increased its capital stock from \$2,000,000 to \$2,600,000.

The United Machine & Press Co., Boston, has been incorporated with authorized capital stock of \$50,000. H. A. Dolbeare is president and John J. Coakley, 214 Devonshire Street, treasurer.

The American Wheel Works, Providence, R. I., has awarded a contract to O. D. Purington & Co. for an addition, 38 x 85 ft., one story.

The Aqua-Thermos Appliance Co., Boston, has been incorporated with authorized capital stock of \$300,000. Oliver A. Wyman, 617 Old South Building, is president and treasurer.

The Colt's Patent Fire Arms Co., Hartford, Conn., has awarded contracts to the Ellison Construction Co. for two additions, 25 x 490 ft., one story, and 45 x 90 ft., one story.

The Liberty Tool & Gauge Works, Woonsocket, R. I., has been incorporated with authorized capital stock of \$40,000. The incorporators are Gustave A. Friedrichs, John S. Blondin, Adolph Kalberer and Alexander W. Keema.

The Sterling Motor Co., 705 Center Street, Brockton, Mass., has awarded a contract to C. A. Batson for an addition, 100 x 100 ft., one and two stories.

The Norwalk Foundry & Machine Co., Norwalk, Conn., has been incorporated with authorized capital stock of \$125,000. The incorporators are Lillie E. Disbrow and K. Frances Maginn, Bridgeport, and Jonathan Grout, Fairfield.

The Aberthaw Construction Co., 27 School Street, Boston, is having plans drawn for a shipbuilding plant at Fields Point, Providence, R. I.

The Kelley-Spear Co., Bath, Me., has awarded to the McNally Building Co., Framingham, Mass., a contract for three buildings: 40 x 80 ft., three stories; 36 x 90 ft., two stories, and 38 x 58 ft., one story.

The Henry Mfg. Co., Ansonia, Conn., has been incorporated with authorized capital stock of \$15,000 to manufacture tools and gages. It will commence business with capital of \$3,400. The incorporators are Jeremiah F. Henry, Ansonia; John A. Schreiber, Edward F. Malone and Edward Sherrett, Bridgeport.

The Atlantic Mfg. Co., Bridgeport, Conn., will begin operations July 1, in a newly acquired plant on New Haven Avenue, Milford, Conn.

The Hunt-Spiller Mfg. Corporation, 383 Dorchester Avenue, Boston, has awarded a contract to the C. A. Dodge Co. for a foundry addition, 50 x 100 ft., one story, and an air-furnace building, 48 x 60 ft., one story.

The Modern Machinery Co., Providence, R. I., has been incorporated with authorized capital stock of \$10,000. The incorporators are Harry M. Burt, 79 Norwood Avenue, Cranston; G. H. Depolan and E. C. Stiness.

The Worcester Stamped Metal Co., 9 Hunt Street, Worcester, Mass., is building an addition to cost \$10,000. The E. J. Cross Co. has the contract.

The Nekia Mfg. Co., Lawrence, Mass., has been incorporated with authorized capital stock of \$50,000, to conduct a general foundry and machine shop. Herrick Aiken, Franklin, N. H., is president and treasurer and M. S. O'Brien and H. M. Warner are directors.

The Builders Iron Foundry, Providence, R. I., has awarded a contract to William H. Hamlyn & Son for a foundry addition, two stories, to cost \$10,000.

The Bowers Mfg. Co., Boston, has been incorporated with authorized capital stock of \$50,000 to conduct a general foundry and machine shop and to manufacture munitions. The incorporators are William Berwin, 1056 Commonwealth Avenue, president and treasurer; J. M. Gove and Thomas A. Bowers.

The Marlin-Rockwell Corporation, New Haven, Conn., has awarded a contract to the Fred T. Ley Co., Springfield, Mass., for an addition, 60 x 177 x 107 ft., two stories, at its Willow Street plant.

The Bryce Mfg. Co., Bristol, Conn., has increased its capital stock from \$50,000 to \$100,000.

The Liberty Tool & Machine Co., Derby, Conn., has been incorporated with authorized capital stock of \$50,000 by W. J. Shaughnessy, Jr., Walter J. Murphy and C. L. Buckley.

The Abbott Ball Co., Hartford, Conn., has been incorporated with authorized capital stock of \$500,000. The incorporators are George E. Abbott, Charles H. Abbott and Arthur L. Shipman.

The Underwood Typewriter Co., Hartford, Conn., has awarded a contract to the Porteus-Walker Co. for an addition, 20 x 50 ft., one story.

The Malleable Iron Fittings Co., Branford, Conn., has awarded a contract to H. Wales Lines Co., Meriden, for a large addition to its office building.

The Holmes Special Tool Co., New Haven, Conn., will build in Fair Haven, Conn., a factory, 34 x 62 ft., two stories.

The Fitzgerald Mfg. Co., Torrington, Conn., is asking bids on a factory, 53 x 307 ft., with ells, 50 x 61 ft. and 13 x 32 ft., two stories.

The C. & K. Tool Co., New Haven, Conn., has been incorporated with authorized capital stock of \$50,000 to do a general machine shop business. The incorporators are Robert H. Chirgwin, New Haven; Ralph H. Clark, Derby, and Paul Webb, Hamden.

The New Home Sewing Machine Co., Orange, Mass., has awarded a contract to the Casper Ranger Construction Co., Holyoke, for a \$75,000 addition. Other extensive additions are contemplated. The company recently received an order for small shells.

The Gilbert & Barger Mfg. Co., Springfield, Mass., has awarded a contract to the H. Wales Lines Co., Meriden, Conn., for a temporary factory building, 60 x 120 ft., one story.

The Worthington Pump & Machinery Corporation has awarded to the Casper Ranger Construction Co. a contract for a machine shop addition, 90 x 200 ft., one story, and a foundry addition, 80 x 180 ft., one story, at its Dean Works, Holyoke, Mass.

The Koehler Mfg. Co., Marlboro, Mass., is having plans drawn for an addition, 45 x 180 ft., two stories.

The J. N. Lapointe Co., Hudson, Mass., is building an addition, 40 x 300 ft., one story.

The Simonds Mfg. Co., Fitchburg, Mass., has awarded to Wiley & Foss a contract for an addition, 50 x 100 ft., three stories.

Philadelphia

PHILADELPHIA, June 17.

The Hero Mfg. Co., Gaul and Adams streets, Philadelphia, manufacturer of oilers, metal specialties, etc., has awarded contract to the Austin Co., Bulletin Building, for a one-story steel-frame machine shop, 40 x 200 ft., on Stokley Street, near Westmoreland Avenue, to cost about \$25,000.

The Haas Automobile & Supply Co., 4303 North Fifteenth Street, Philadelphia, manufacturer of automobile specialties, is having plans prepared for a three-story factory and office, 20 x 110 ft., at 3943 North Broad Street.

The Baldwin Locomotive Works, Broad and Spring Garden streets, is planning to increase the capacity of its plant to provide for greater output for Government work. The company has received a contract from the Railroad Administration for 100 locomotives. It is said that the Philadelphia works will be increased over 25 per cent, and give employment of about 3000 additional men.

The Philadelphia & Reading Railroad, Reading Terminal, Philadelphia, has awarded contract to A. Woelfel, Lancaster, Pa., for a one-story brick machine shop, 50 x 175 ft., at its works at Rutherford, to cost about \$50,000.

The Chester Shipbuilding Co., Chester, Pa., has commenced preliminary work for increasing the capacity of its plant. Old buildings on West Front Street, between Parker and Fulton streets, are now being razed to make way for new additions. It is said that the new shops to be constructed will augment the shipyards by almost 40 per cent.

The Calico Iron Works, Philadelphia, has been incorporated with capital of \$300,000 by F. R. Hansell, Land Title Building, Philadelphia, and S. C. Seymour, Camden, N. J., to manufacture iron and steel products.

Monks & Johnson, 79 Devonshire Street, Boston, structural engineers specializing in shipbuilding, have leased the entire building at 1825 Wylie Street, Philadelphia, for a branch office. The company is now constructing the addition to the shipbuilding works of the Bethlehem Shipbuilding Co., at Sparrows Point, Md., to cost about \$3,000,000, and the construction of a plant at Wilmington, N. C., for the Liberty Shipbuilding Co.

The New York Shipbuilding Corporation, Camden, N. J., has awarded a contract to Armstrong & Latta, Land Title Building, Philadelphia, for the construction of five new shipways at its yards. Plans have been filed for a two-story addition to the works, 94 x 164 ft.; one-story addition, 72 x 105 ft.; extension to north and east sides of the plate and angle shop, 42 x 350 ft., and 54 x 73½ ft., respectively, and one-story extension to the forge shop.

The American Steel Foundries, Chester, Pa., has awarded a contract to R. H. Scroggins, Chester, for a one-story machine shop.

Fire, June 7, destroyed the plant of the McClanahan-Stone Machine Co., Hollidaysburg, Pa., manufacturer of iron and steel castings, etc., with loss estimated at \$150,000. The plant has been engaged in the manufacture of machinery for munition plants.

The new additions to be erected at the structural steel and iron works of the McClintic-Marshall Co., Pottstown, Pa., will cost about \$2,000,000 and will more than double the present capacity. The extensions will be used for the production of fabricated steel for Government vessels. Ground has been broken for a building, 400 x 600 ft. The Hughes-Foulkrod Co., Commonwealth Building, Philadelphia, is the contractor.

A one-story boiler plant, 40 x 120 ft., to cost \$35,000 will be erected by the Pittsburgh Steel Products Co., at its works, Allenport, Pa.

Lewis F. Shoemaker & Co., Harrison Building, Philadelphia, have purchased about 23 acres from the Pottstown Iron Co., Pottstown, Pa., to provide for the proposed extensions to its plant at that location. The increase in the works will be used for the production of fabricated steel for Government ships.

The G. & H. Barnett Co., 1076 Frankford Avenue, Philadelphia, manufacturer of dies and rasps, has filed plans for a one-story brick addition, 15 x 200 ft., at Richmond and Frankford avenues, to cost \$15,000.

The Perkins-LeNoir Co., Philadelphia, has been incorporated with a capital of \$5,000 by J. E. Perkins and others to manufacture machinery.

The S. A. Ashman & Son Co., 2300 East Tioga Street, Philadelphia, manufacturer of iron and steel forgings, has filed plans for a one-story forge shop, 48 x 120 ft., to cost \$12,000.

A one-story brick and steel power plant, 27 x 85 ft., will be erected by the Bellevue Worsted Mills, Philadelphia, at its works at Sixteenth Street and Hunting Park Avenue.

The Roberts Filter Mfg. Co., Sixth and Columbia streets, Philadelphia, has acquired the two-story factory building, foundry and boiler plant, on property 80 x 153 ft., at Ruan and Lackawanna streets, Frankford.

The Vulcan Iron Works, Wilkes-Barre, Pa., has started erection of a new steel foundry on its Buttonwood property about one-half mile from the main works at South Wilkes-Barre. The steel foundry is the first of a series of buildings under contemplation, to be erected on the Buttonwood property. Westinghouse Church Kerr & Co., Inc., New York, has the contract and also prepared the plans. The building will be 200 x 400 ft. About 250 men will be employed in the foundry and it is expected it will be in operation by the end of this year. It will be equipped with the latest improved open-hearth steel furnaces. Bent L. Weaver, formerly superintendent of the steel foundry of the Bethlehem Steel Co., at Steelton, Pa., has been appointed superintendent and assumed his new duties June 1. F. J. Smith is secretary and purchasing agent.

Baltimore

BALTIMORE, June 17.

The Special Tool Co., 104 West Pratt Street, Baltimore, has been incorporated with \$18,000 capital stock by Charles F. Kraut, William C. O'Brien and Charles B. Backman, to manufacture tools, etc.

The Maryland Welding Co., Baltimore, has increased its capital stock from \$25,000 to \$100,000.

The Southern Iron Works, Norfolk, Va., has been incorporated with \$25,000 capital stock. J. Norman Smith is president.

The Curtis Bay Copper & Iron Works, Curtis Bay, Md., recently incorporated with a capital of \$1,000,000, is having plans prepared for three buildings, each 60 x 110 ft., to be used as machine shops and other works for the manufacture of copper and iron specialties as well as ship repair parts, castings, etc. William F. Cochrane is chief engineer. The main office of the company will be located at South Baltimore.

The Van Melter Co., Baltimore, has been incorporated with a capital of \$190,000 by C. Ford Seely, Harper H. Dovell and John L. Sewell, to manufacture metal rules, measuring devices, etc.

The Southern Truck & Car Corporation, Greensboro, N. C., recently incorporated with a capital of \$1,000,000, is planning the construction of a plant for the manufacture of motor trucks. A site of 7 acres has been purchased and plans for a building, 60 x 200 ft., prepared. H. A. Christie is secretary and treasurer.

Fire, June 9, destroyed the plant of the Dixie Cotton Oil Co., Bell Street, Montgomery, Ala., with an estimated loss of \$50,000.

The Gerson Iron Co., Birmingham, Ala., is planning for extensions and improvements in the iron works of the Southern Rolling Mills, recently acquired. It is said that the present capacity will be increased. M. J. Gerson is president.

The Dwight Mfg. Co., Alabama City, Ala., is planning the erection of a two-story machine shop, 50 x 60 ft., for the repair of cotton-mill machinery, etc.

The Emergency Fleet Corporation, Washington, is planning for a shipbuilding plant at Mobile, Ala., for the construction of 7500-ton concrete vessels. The initial works will consist of four shipways, with shop and construction buildings. The corporation is also planning a shipbuilding works at Jacksonville, Fla.

The Seminole Mfg. Co., Jacksonville, Fla., has been incorporated with a capital of \$50,000 by S. F. Williams and C. E. Maull, to manufacture agricultural machinery.

The Tolzer Engine Co., Columbia, S. C., has been incorporated with a capital of \$50,000 by J. P. Matthews, T. F. Dial and George L. Dial, to manufacture engines.

Pittsburgh

PITTSBURGH, June 17.

A very heavy demand has come up recently in the Pittsburgh district for machine tools, cranes and other equipment, and local dealers are swamped with inquiries for the largest quantity of machinery that has ever come out in this market at one time. A large amount of fabricating ship work has been placed by the Emergency Fleet Corporation with the Standard Steel Car Co.'s Butler and New Castle, Pa., works, and also with the Pressed Steel Car Co., mostly for the McKees Rocks plant, though some will be turned out at the Woods Run works. These concerns have inquiries out for large quantities of punching and shearing machinery, bending rolls and other similar equipment used in fabricating work. The McClintic-Marshall Co. will



A New Hospital Train Built in England for the Army Medical Department in France

build large additions to its Rankin, Pa., and Pottstown, Pa., fabricating works, each addition to be capable of turning out about 10,000 tons of fabricated steel per month. The plants are being built by direction of the Government and will be financed by the company itself. Priority orders have been secured for the equipment needed for the two new plants, but so far only a small part of the machinery has been placed.

With work already on the books, inquiries that are out and in sight, local machinery dealers say that work is ahead for builders of machine tools and cranes for from 18 months to two years. There is a great scarcity of skilled labor in this district, and the country is scoured by the Westinghouse Electric & Mfg. Co., the Westinghouse Machine Co., and by builders of heavy rolling mill and steel works equipment in efforts to find men. The builders of steel works and rolling mill equipment such as Mackintosh-Hemphill Co., Mesta Machine Co., United Engineering & Foundry Co., and A. Garrison Foundry Co., are all on heavy Government orders and are operating their plants as near to full capacity as is possible. They are filled up for a year or more ahead. The Pittsburgh Machine Tool Co., builder of heavy lathes and other machine tools, has large Government contracts on hand that will keep it busy for some months.

A tentative inquiry has come from the Ordnance Department of the United States Steel Corporation for sufficient machine tools to turn out 1500 12, 14 and 16-in. shells per day. The inquiry is of a general character and it is probable that John S. Oursler, who is in charge of construction of the Neville Island plant for making guns and projectiles, will send a committee to the Watertown Arsenal to see equipment in use there that is turning out similar work.

The McClintic-Marshall Co. has placed a contract with Manning, Maxwell & Moore for 50 6-ton cranes and 8 10-ton cranes for the additions it is to make to its Pottstown, Pa., fabricating plant. The company will also be in the market for machine tools and more crane equipment for both the Pottstown and Rankin plants. It has given a contract to the Toledo Bridge & Crane Co., Toledo, Ohio, for several 20-ton cranes and to Pawling & Harnischfeger for a number of 8 and 10-ton cranes. The crane equipment alone for the Pottstown and Rankin plants amounts to \$500,000 or more.

The Standard Steel Car Co. has placed a contract with Manning, Maxwell & Moore for a 1000-ton hydraulic press to be installed in its Hammond, Ind., works, also for accumulator, pumps and all other accessories.

The LeMoine Steel Co., which will build a new plant at Monongahela City, Pa., to manufacture high speed steel, will likely be in the market for some machine tools and other equipment.

The Carbon Limestone Co. will make large additions to its plant at Hillsville, Pa., and will likely need some new equipment.

The National Roll & Foundry Co., Avonmore, Pa., is making an 80-ft. extension to its foundry and is installing a third air furnace.

The Pittsburgh Tool Steel Wire Co., New Brighton, Pa., has placed a contract with Micklin Brothers, Rochester, Pa., for an addition to its plant.

The contract for the cranes for the new car shops of the Baltimore & Ohio Railroad to be built at Glenwood, Pa., near Pittsburgh, has been placed by Westinghouse Church Kerr & Co. with the Morgan Engineering Co., Alliance, Ohio, and the Toledo Bridge & Crane Co., Toledo, Ohio. There were 10 of these cranes ranging from 5 tons to 50 tons in capacity.

The United States Cast Iron Pipe & Foundry Co. has an inquiry out for two 5-ton and two 10-ton traveling cranes for its works at Scottsdale, Pa.

The James Maher Pipe Tongs & Wrench Co., Wheeling, W. Va., has been incorporated with a capital of \$100,000 to manufacture wrenches, etc. M. E. McComb, S. M. Noyes and L. B. Sorge are the incorporators.

Chicago

CHICAGO, June 17.

Interest continues general and strong in the shell plant which the Symington interests of Rochester, N. Y., are to establish in Chicago, according to recent announcement. It cannot yet be stated in what section of Chicago the plant will be located, but additional purchases of machine tools have been made, this part of the project being in the hands of Thomas A. Reid, of the A. R. Williams Co., dealer in machine tools, Buffalo.

More railroad inquiries are out, but action in some cases is awaiting the granting of appropriations. One inquiry comes from the Pennsylvania Lines West, which will call for the delivery of tools at Fort Wayne, Ind., valued at about \$150,000.

The Chicago, Burlington & Quincy, which recently closed for a large number of tools, is in the market for an 18-in. x 7-ft. 6-in. engine lathe; 14-in. x 4-ft. 6-in. lathe; 30-in. radial drill, double-end punch and shear with a 20-in. throat to punch 1-in. hole; 20-in. heavy-duty shaping machine, 1½-in. single-head bolt cutter, draw cut high-speed power saw, 50-lb. power hammer and a combination rip and cross-cut saw with boring attachment.

The Union Pacific is in the market for delivery at Omaha, Neb., of two 2½-ft. radial drills.

The L. Wolf Mfg. Co., of Chicago, which was figuring on a shell contract, has requested sellers to cease estimating on tools necessary for performing the 55 operations which are specified. It is understood that the proposition is in abeyance.

Business with all dealers and district managers is good, the bulk of it coming from those directly or indirectly serving the Government. The machine-tool trade has no apprehensions over the strict regulation by the Government of iron and steel deliveries, inasmuch as the many lines to which such deliveries are specifically and officially sanctioned are quite ample to give them all the business they can handle.

Dealers who have attended auction sales of used machinery find that prices are obtained which represent 10 to 15 per cent of the same tools when new. Eastern dealers have been the most willing to pay the high prices.

The Parrett Tractor Co., manufacturer of farm tractors, has purchased the former plant of the Central Locomotive & Car Works, Chicago Heights, and it is stated that the company intends to double its production of 200 tractors a month. The property includes a concrete building, 150 x 160 ft., which will be used as a machine shop, and several other buildings.

The Northwestern Steel Corporation, Minneapolis, Minn., has purchased from the Franklin Park Foundry Co. its foundry properties at Franklin Park, Minn., and after improvements are made will begin operations.

The Irving Construction Co., 133 West Washington Street, Chicago, has been awarded the general contract for a one-story addition, 30 x 72 ft., to the shop of the Superior Stove Works, 832 West Superior Street, Chicago. It will cost \$5,000.

A. M. Castle & Co., iron and steel, 1300-1304 North Branch Street, Chicago, are eventually to build a warehouse and plant to cost \$400,000. The first step is a building, for which a contract has been let, 136 x 308 ft., to cost \$80,000.

Announcement has been made that a 10-acre shipyard will be built at 100th Street and Calumet River, South Chicago, by the Chicago Shipbuilding Co. Application has been made for a permit to lay tracks on which heavy machinery and material may be transported. The land was leased from the Commonwealth Edison Co. of Chicago.

The Winnebago Tractor Co., Chicago, has been incorporated in Delaware with capital of \$300,000 to manufacture tractors, motors, etc. Nahum C. Bement, Rockford, Ill.; George N. Whitford, Shalbona, Ill., and William Luxmore, Chicago, are the incorporators.

The Hoyt Metal Co., Granite City, Ill., will make alterations and extensions in its plant to cost about \$10,000.

The Independent Pneumatic Tool Co., Aurora, Ill., will make extensions and improvements in its five-story works to cost about \$15,000.

The Concrete-Steel Co., West Jackson Boulevard, Chicago, is having preliminary plans prepared for the construction of a one-story building, 225 x 350 ft., to cost about \$70,000.

Milwaukee

MILWAUKEE, June 17.

New business is being booked by local machine-tool builders at a rate to keep delivery schedules far advanced, but it is believed that makers have yet to encounter the bulk of the demand to be made within a short time on Government account. Inquiries indicate that actual buying will begin as soon as it is possible to ascertain the ability of shops to furnish tools. During the last two weeks or more manufacturers of machine-tools have been fairly overwhelmed by a volume of inquiries.

The orders received include a miscellaneous lot of equipment. Local jobbers report an excellent demand for tools from metal-working shops in the interior of Wisconsin, where makers of gas engines, motor trucks, tractors and agricultural machinery are requiring an unusually large amount of equipment for plant extensions. In Milwaukee the demand continues broad and pressing.

The Globe Seamless Steel Tubes Co., Milwaukee, has completed plans and will award contracts within a week or 10 days for the construction of two additional shop extensions, 130 x 250 ft. and 130 x 175 ft., to its main plant at Thirty-seventh and Burnham streets, West Milwaukee. The buildings will be of brick and steel and will be equipped with three 10-ton electric cranes and a miscellaneous list of tools, orders for which will be placed at once. The company recently took occupancy of a large shop addition but finds further enlargement of its facilities necessary. Frank J. O'Brien is general manager.

The General Motors Corporation, Detroit and New York, is reported to have acquired control of the Janesville Machine Co., Janesville, Wis., manufacturer of farm tillage tools and implements, and has purchased 125 acres at Eastern Avenue and the Chicago & Northwestern main and belt lines in Janesville as a site for a proposed new tractor manufacturing plant, to be erected at once. Surveys of the site are being made and details of the buildings will be available shortly. It is stated that the Janesville Machine Co. will not lose its identity and will be continued as a distinct corporation. J. A. Craig, general manager, will occupy the same position in the new organization.

The Northwest Engineering Works, Green Bay, Wis., organized in March to take over the plant and business of the Hartmann-Grelling Co., operating large shipbuilding and ship repair yards, will begin work this week on the erection of a new structural fabricating shop with a minimum daily capacity of 10 tons of shapes and plates, and will install four additional berths, the whole to cost \$150,000, to execute contracts for 12 ships for the Emergency Fleet Corporation. Equipment for the new shop and two large locomotive cranes are being purchased. L. H. Barkhausen is general manager.

The Winther Motor Truck Co., now operating in leased shops at Winthrop Harbor, Ill., has completed arrangements for the erection of a new plant in Kenosha, where a site of 10 acres has been acquired. The main shop will be 125 x 300 ft., of brick and steel, with sawtooth roof, and will require considerable machinery and tools. An issue of 6 per cent bonds in the sum of \$100,000 has been purchased by business

men of Kenosha to build and equip the new works. The Winther company recently accepted a Government order for 150 heavy-duty motor trucks and parts, with an aggregate value of \$1,250,000. Martin P. Winther is president and general manager.

The LaCrosse Plow Co., LaCrosse, Wis., has awarded a contract to the Hahn-Page Co., Rockford, Ill., for the erection of an addition, 80 x 200 ft., one and two stories, which will cost about \$60,000 with equipment now being purchased. A. Hirschheimer is president and general manager.

The Perfex Radiator Co., Racine, Wis., manufacturer of automobile, truck and tractor radiators and cooling systems, has plans for a new manufacturing plant, 125x300 ft., requiring practically a full equipment of new machine-tools, electric motors and other machinery. E. P. Wolf is secretary.

The DePere Mfg. Co., DePere, Wis., has awarded the general contract to Alfred J. Beauregard, for the erection of a brick and steel addition, 100 x 100 ft., to the boiler and structural shop, and a machine-shop extension, 32 x 100 ft. Work began June 10 and is to be completed in 35 days. Additional machinery and equipment is being purchased. The working force will be increased by 100 men when the new shops are ready. Ward Clark is general superintendent.

The Modern Steel Casting Co., 1400 Thirty-third Street, Milwaukee, has increased its capital stock from \$50,000 to \$100,000 to cover the expansion of its business.

The Graef Mfg. Co., Menasha, Wis., will break ground within a few days for its proposed new plant for the manufacture of wire looms for producing paper, pulp mill and manufacturing screens. The main shop will be 110x150 ft. and the loom shop, 40 x 150 ft. John M. Graef is general manager.

The Economy Incinerator Co., Milwaukee, has been incorporated with a capital stock of \$30,000 to manufacture garbage-disposal units for residences, hotels, etc. The incorporators are Richard E. Oberst, Mabel Oberst and Alfred Rudolph.

A Smutkin, Sheboygan, Wis., scrap iron and junk dealer, sustained a total loss of \$6,500 by the destruction of his storehouse and yard at North Fifteenth street and Gelee Avenue by fire on June 12. Mr. Smutkin intends to rebuild.

The Rhinelander Light & Power Co., Rhinelander, Wis., will install a new turbo-generator unit of 500 to 750 kw, capacity in its sub-station, and is also planning changes and improvements in its waterworks pumping station. E. A. Forbes is president and general manager.

Armour & Co., Chicago, have purchased a site in Madison, Wis., for a proposed new cold storage and refrigerating plant, warehouse and branch headquarters building, estimated to cost \$75,000. Details have not yet been announced.

The Jenkins Machine Co., Sheboygan, Wis., awarded the general contract for the erection of a two-story machine-shop addition, 50 x 120 ft., to Verhulst Brothers. The company specializes in the manufacture of wood-working machinery and equipment and is buying some new tools, motors, etc.

The Chippewa Foundry & Machine Co., Chippewa Falls, Wis., has completed experimental work incident to the complete change of the design of Steady-Stream pumping units which it is now producing in 25 to 500-gal. capacities. The company has sufficient orders on its books to keep the plant operating at capacity for several months.

The board of education, Kenosha, Wis., has engaged John D. Chubb, architect, 109 North Dearborn Street, Chicago, to prepare plans for two school buildings, each 150 x 300 ft., two and three stories and basement, with manual training and domestic science departments.

Detroit

DETROIT, June 17.

Increased production of munitions has resulted in a steadily growing demand for machine tools. Orders for single machines for replacements and for additional special machines for particular munition work have raised the tone of the market. Machine-tool jobbers report that sales are above normal and that inquiries for standard milling and grinding machines are numerous. The Government curtailment of coal to automobile manufacturers to 25 per cent of the amount used last year is not expected to affect the industrial situation in Detroit to any pronounced degree. The production of pleasure cars has been cut to one-third of normal in Detroit, and these factories are working largely on munitions. This is especially true of the larger companies, who have turned their entire plants to war work. The labor situation continues acute, with a local shortage estimated at 35,000. The "work or fight" order has as yet shown little effect. Wages are high, and many of the large plants are working every hour of the week.

Twenty-four Michigan automobile parts manufacturers are among the 67 manufacturers recently awarded contracts for parts for model B 3-ton standard army motor trucks by the Quartermaster Department, Washington. The total value of the orders runs well into the millions. The actual number of individual orders is near to 100. The Detroit concerns and what they will make is as follows: Detroit Pressed Steel Co., frames; International Metal Stamping Co., dashes; C. R. Wilson Body Co., seat assemblies; Hayes Mfg. Co., seat assemblies, fan shrouds, hoods and hood sills, electric light bulb cases; J. W. Murray Mfg. Co., dustpans; Barclay Nicholson Co., wiring assemblies; Gemmer Mfg. Co., steering gears; Timken-Detroit Axle Co., axles; Hinkley Motor Corporation, motors; Kales Stamping Co., gasoline line pipe clips; Detroit Lubricator Co., clutch release bearing oiling assemblies; Detroit Steel Products Co., reach rod assemblies, set springs; Michigan Stamping Co., mufflers, fan shrouds, dashes, bumpers; National Machine Products Co., sparks and throttle assemblies, steering gear frame brackets; National Can Co., radiators; Briggs Mfg. Co., tops, storm curtains and upholstery; Edmunds & Jones Corporation, lamps; American Brass & Iron Co., flare tube elbows; elsewhere in Michigan—Hayes Motor Truck Wheel Co., St. Johns, wood wheels; Keeler Brass Co., Grand Rapids, hood latch assemblies; Michigan Screw Co., Lansing, rear spring shackle pins and bracket pins.

Production of submarine chasers at Henry Ford's plant at River Rouge, west of Detroit, will begin this month. The plant has been erected in slightly more than 100 days and everything is in readiness for launching the first boat. According to present plans one complete submarine chaser will be made each day.

The Michigan Drop Forge Co., Pontiac, organized in February, 1916, having purchased the assets of the Pontiac Drop Forge Co., has been dissolved and succeeded by a new company with the same name but incorporated under Delaware laws. The officers of the company are: President, B. F. Esger; vice-president, Hugh O'Connor; secretary and treasurer, Paul A. Lelidy.

The Hackett Motor Car Co., Grand Rapids, Mich., is rushing to completion the erection of its factory. It will comprise three units, 70 x 500 ft. each, built parallel and linked together at the end by a two-story unit, 60 x 400 ft. The total space will be 180,000 sq. ft. and will give a capacity for producing 100 cars per day.

The Saginaw Malleable Iron Co., Saginaw, Mich., will double the size of its plant by installing two more furnaces and increasing the capitalization from \$500,000 to \$750,000, the employees from 300 to 600, and the size of the plant to 136 x 875 ft. Most of the additional stock has been taken by W. C. Durant of the General Motors Corporation and his associates. The plant is melting 65 tons of metal per day, and this will be doubled. It is now engaged almost entirely in making malleable castings for the Ordnance Department. The officials are: C. F. Drozeski, president and general manager; W. J. Wickes, vice-president; George H. Hannum, treasurer, and Julius B. Kirby, secretary.

The Power Truck & Tractor Co., Detroit, has leased the manufacturing building at Beard Avenue and the Michigan Central Railroad and will equip it with machinery. The plans call for early plant operation.

The Peninsular Milled Screw Co., Detroit, has purchased 10 acres on Mount Elliott Avenue, and next year will erect a factory to cover one-half of the property.

The Precision Castings Co. of Syracuse, N. Y., will immediately rebuild its foundry at Pontiac, Mich., burned May 26 with a loss of \$50,000. The melting room was completely destroyed and the molding room badly burned, together with about \$30,000 worth of patterns for Government work. The plant has been engaged in the manufacture of castings for naval guns. C. L. Ackerson is foundry manager.

Stanley Wojtan, 510 Washington Avenue, Muskegon, Mich., is promoting a company to manufacture a patented railroad tie. An alternative plan of manufacturing on a royalty basis is also under consideration.

The Rudy Furnace Co., Dowagiac, Mich., has awarded contract to the Byers Construction Co., Kalamazoo, for an addition, to cost about \$50,000, which will greatly add to its manufacturing capacity. H. L. Wood is vice-president and sales manager.

The General Motors Corporation, Detroit, has broken ground for a one-story drop forge works, 60 x 300 ft., at Holbrook and Euclid avenues, to cost about \$250,000.

The Murchey Machine Tool Co., Porter Street, Detroit, has awarded contract to the Otto Misch Co., Boston Street, Detroit, for a three-story addition.

The Flower Stephens Mfg. Co., Clayton Street, Detroit,

has completed plans for a one-story foundry addition, 40 x 150 ft., to cost \$17,000.

The Consolidated Press Co., Hastings, Mich., will build a new one-story foundry.

Cleveland

CLEVELAND, June 17.

The machinery market is very active and the reported decision of the Government to discontinue placing war business in the East, where plants are already crowded, and distribute it among manufacturers in the Central West is expected to have a stimulating effect. Doubtless capacity can still be found for Government work in northern Ohio, but the supply of labor is lacking and the situation is growing worse. Many plants would put on a large number of additional men could they be secured.

The Warner & Swasey Co., Cleveland, will purchase about \$40,000 worth of new equipment to round out its tool room and collet departments. The Templar Motors Corporation, Cleveland, is understood to have definitely secured an additional order for 155-mm. shells and will shortly buy considerable equipment, including about 12 21-in. lathes. The Grant Motor Car Corporation within the past few days has purchased over \$200,000 worth of machinery. The American Shipbuilding Co. has purchased considerable equipment that was included in its recent list. The New York Central Railroad, which issued a list of 175 machines, has not yet placed any orders.

The demand for screw machines, which was light for several weeks, has become very active. Among sales the past week were the following: Five to the National Cash Register Co., Dayton, Ohio; 13 to the Bartlett Hayward Co., Baltimore; seven to the Cadillac Motor Car Co., Detroit; four large machines to the Standard Equipment Co., Cleveland; 10 to the Remington Arms Union Metallic Cartridge Co., Bridgeport, Conn.; eight to the Eastman Kodak Co., Rochester, N. Y., and five to the Cleveland Punch & Shear Works Co., Cleveland. In addition there is a very heavy demand for single machines.

A great deal of inquiry is coming from the railroads for locomotive cranes, mostly for single machines. An order for 10 locomotive cranes for the New York, New Haven & Hartford Railroad has been taken by the Brown Hoisting Machinery Co., Cleveland.

The Government is planning to place contracts for a large number of hand grenades with local gray iron foundries, and through the Cleveland War Industries Board is making a canvass of capacities of foundries. The hand grenade orders first placed by the Government were for malleable iron, but it has been found that gray iron is more satisfactory, as the grenade breaks into more pieces when exploded. Malleable foundries having contracts for grenades have transferred this work to gray iron plants.

The Buckeye Brass & Mfg. Co., Columbus Road, Cleveland, has acquired the old plant of the Cleveland Pneumatic Tool Co. on Hawthorne Avenue, and contemplates moving into the new quarters shortly, which provide for considerable increase in manufacturing facilities.

Men associated with the Semi-Steel Foundry Co., Barberton, Ohio, have become interested in the Triumph Machine Tool Co., Cleveland, and the plant of the latter company has been moved to new quarters in Barberton.

The Smolensky Mfg. Co., Cleveland, will build a new factory, plans for which are being prepared by Ernest McGeorge, architect, Leader-News Building.

The Grant Motor Corporation, Cleveland, will enlarge its Findlay, Ohio, plant by the erection of three one-story buildings, 50 x 190 ft., 50 x 146 ft. and 30 x 66 ft. respectively; two buildings, 50 x 210 ft., and an office building. A new heating system will be installed. The general contract has been placed with the W. J. Thompson & Son Co., Cleveland. The W. S. Ferguson Co., Cleveland, is the engineer. The plant will be used for the machining of 155-mm. shells, for which the company recently took a large order.

The Doehler Die Castings Co., Toledo, Ohio, has acquired a two-story building, 60 x 240 ft., belonging to the Ohio Electric Car Co., which will be fitted up as a machine shop for machining rifle and hand grenades and other war equipment.

The Maumee Malleable Castings Co., Toledo, will build a foundry addition.

The Bunting Brass & Bronze Co., Toledo, is planning the erection of a new foundry building.

The Bunting Machine Co., Toledo, suffered a fire loss estimated at \$110,000 a few days ago.

The Mather Spring Co. and the Mather Mfg. Co., Toledo, have increased their capital stock, the former from \$300,000

to \$1,000,000 and the latter from \$6,000 to \$600,000. It is stated the increases were made to provide additional working capital to handle expanding business.

The United Machine & Mfg. Co., Canton, recently organized with capital stock of \$150,000, will manufacture centrifugal pumping machines, die-making machines and steam specialties. It will engage largely in Government work at present and it is understood some large orders have been taken. The name of the company was incorrectly given as the Ohio Machine & Mfg. Co. in our issue of June 13.

The Gussett Boiler Works, Canton, Ohio, has placed contract for the erection of a one-story addition, 40 x 99 ft.

The Roderick-Lean Mfg. Co., Mansfield, Ohio, maker of agricultural implements, will enlarge its plant by the erection of a new steel and concrete building providing 51,000 sq. ft. of floor space. The punching, shearing and forging departments will be located in this building. Considerable new machinery will be installed.

The Williams Foundry & Machine Co., Akron, Ohio, is in the market for a round lot of machine tools, mostly small boring mills and lathes.

The Giant Tire & Rubber Co., Findlay, Ohio, is building a new plant to replace one recently burned.

The plant of the Economy Products Co., Wooster, Ohio, will be moved to Massillon, Ohio, and operate under the name of the Lucius Reinforced Tank Co., which has been incorporated with a capital stock of \$50,000. L. A. Koons is president; J. A. Fritz, vice-president; C. V. Lucius, general manager, and Louis Adrian, treasurer. The company will manufacture pressure tanks.

The U. S. Automatic Co., Amherst, Ohio, is planning the erection of a new two-story and basement building that will about double the capacity of its plant.

The Wood Shovel & Tool Co., Piqua, Ohio, will erect a one-story addition, 54 x 85 ft.

Cincinnati

CINCINNATI, June 17.

There is no change in the urgent demand for machine tools and shops are being again combed over in an effort to locate machines that could be used by companies having war contracts. Automobile manufacturers in this territory are practically all working on war work and the majority of them took on these war contracts some time before the recent order to cut down the production of pleasure cars was received. Foundries are somewhat handicapped by the shortage of labor, but under the circumstances deliveries of castings to machine-tool plants are considered fairly satisfactory. The advance of freight rates will undoubtedly cause a re-adjustment of prices on castings by jobbing foundries, and it is stated that some contracts that were not made on a sliding scale basis will of necessity be changed to conform with new costs.

The strike of machinists at Hamilton, Ohio, in two plants has been settled and the men returned to work June 11. It is understood that the blanket advance of the 10c. per hr. was not granted and the two companies in question reserve the right to make advances to individual workmen where their output justifies them.

Additional details have been given out about the proposed addition to the plant of the Lodge & Shipley Machine Tool Co., Cincinnati. It will be 90 x 540 ft., of saw-tooth roof construction and will house the light machine department, that is expected to be operated almost exclusively by women. The heavy machining will be done by men in the existing plant. Restrooms, a restaurant and other conveniences will be provided for the female laborers. J. Wallace Carrel is general manager.

Zettel & Rapp, architects, Cincinnati, are preparing plans for the large manufacturing plant to be erected in Oakley suburb by the Trailmobile Co., Cincinnati.

The Advance Tool Co., Cincinnati, has increased its capital stock from \$50,000 to \$100,000 and will add to its manufacturing facilities. The company makes a specialty of tools, dies and fixtures. George Langen, Jr., is president.

The daily press reports that the Air Nitrates Corporation, 360 Madison Avenue, New York, has secured contract from the Government for an immense nitrate plant to be erected in a Cincinnati suburb. It is stated that a site at Elizabethtown, Ohio, has been selected, but this report has not been officially confirmed.

The National Vacuum Machinery Co., Dayton, Ohio, has increased its capital stock from \$15,000 to \$100,000. It is rumored that some additions to its plant are contemplated.

It is reported that the Ohio Electric Railway Co. will construct a machine shop, car barns and storage building

at Springfield, Ohio, and will remove its present shops from Columbus to Springfield.

The Wagner Mfg. Co., Sidney, Ohio, has recently completed an addition to its foundry and finishing department.

The Stitt Ignition Co., Columbus, Ohio, has been incorporated with \$10,000 capital stock by George E. Whitney and others.

The Central South

LOUISVILLE, Ky., June 17.

The Louisville Car Wheel & Railroad Supply Co., the Henry Vogt Machine Co., Louisville Frog & Switch Co. and about 40 other industrial concerns, either working on war orders or anxious to receive such orders, have carried out a movement launched by Henry Vogt of the Henry Vogt Machine Co., whereby each of these concerns will contribute a pro-rated amount through the Louisville Board of Trade and Louisville Industrial Foundation in order to operate a permanent war-order bureau in Washington to look after the interests of local manufacturers.

The Glen-Brook Power Co. of Munfordsville, Ky., capital \$30,000, has been incorporated by R. D. Lane and others, and has plans for the construction of a power plant.

The Boulter Sheet Metal Works, 912-14 South Eighth Street, Louisville, has let contract to C. A. Koerner, Louisville, for an addition to its factory.

The J. J. Reilly Mfg. Co., Louisville, manufacturer of steam pumps, has increased its capital from \$50,000 to \$150,000.

The Board of Water Works, Louisville, has authorized President S. Zorn to take bids for a new pumping engine for the Crescent Hill plant, which will have capacity of 30,000,000 to 40,000,000 gal. per day, and for the purchase of boilers and new equipment for the Riverside station.

Charles Roemer of Bowling Green, Ky., has sold the machine shop and equipment of the Park City Machine Co. to M. E. Morrison, Bartlesville, Okla., who will specialize in oil-well equipment and supplies.

The Blockton Mining Co., W. M. Evans, manager, West Blockton, Ala., wants prices on a ventilating fan of 40,000 cu. ft. per min.

The Board of Public Works of Louisville has asked local architects to prepare plans for a proposed river warehouse and terminal. It is planned to install electrically operated trams to carry freight from steamboats to the warehouses.

The Union Spar Co., Marion, Ky., has been incorporated with a capital stock of \$25,000 by J. T. Reynolds and associates to operate a flourspar works.

The Wadsworth Electric Mfg. Co., Covington, Ky., has been incorporated with a capital of \$100,000 to manufacture electric specialties. George Wadsworth, Alfred Allen and Harry W. Percival, Covington, are the incorporators.

The Davis Foundry & Machine Co., Rome, Ga., is in the market for a 6- or 7-ton triplex chain hoist, 12-ft. lift, new or second-hand.

St. Louis

ST. LOUIS, June 17.

The Cardwell Gin Co., Cardwell, Mo., Charles Riggs, president, is in the market for about \$10,000 worth of cotton gin equipment.

H. L. Tomlin, Sharp Building, Kansas City, Mo., will equip an electrical service building.

Drew, Miss., has appropriated \$15,000 for additional electric light and power plant equipment.

The Electric Light Committee, Cameron, Mo., will install a forced draft system in the electric power plant.

The Union Electric Light & Power Co., St. Louis, will remodel a boiler house and install about \$10,000 worth of new equipment.

The Durant Grain & Elevator Co., Durant, Okla., E. M. Stewart, manager, is in the market for machinery for an elevator with a capacity of 150,000 bu. and a mill with a daily capacity of 500 bbl.

The Durham Milling Co., Durham, Okla., is in the market for about \$20,000 worth of milling machinery. A. R. and C. H. Hacker are interested.

The Butler Mfg. Co., Kansas City, Mo., will equip a plant 126 x 270 ft., for the manufacture of steel and metal products.

The Ardmore Producing & Refining Co., Ardmore, Okla., has increased its capital by \$800,000 and will extend its capacity.

The Westwego Ice Co., Westwego, La., has been incorporated with a capital stock of \$35,000 by Peter and C. A. Buchler and Joseph Vallee and is in the market for machinery.

D. R. Downing, Newark, Mo., is in the market for equipment for an irrigation pumping plant.

The Simpson Pneumatic Drilling Co., Stroud, Okla., George W. Simpson, manager, will equip a \$50,000 plant for manufacturing oil well drilling machinery.

The Eureka Brass Co., Red Bud Avenue, St. Louis, is building a one-story addition, 90 x 150 ft., to cost \$25,000.

The Fred Medart Mfg. Co., Dekalb Street, St. Louis, manufacturer of steel lockers, etc., is planning for the construction of an addition to its plant to cost about \$10,000.

The Wabash Railroad, Chicago, is said to be planning to rebuild its car shop at Moberly, Mo., recently destroyed by fire with loss of about \$75,000. The building comprised the car mill department, machinery and wood mill.

The Crunden Martin Mfg. Co., Cedar Street, St. Louis, has broken ground for the erection of a five-story addition, 65 x 125 ft., to be used for metal and wood-working operations. It is estimated to cost about \$60,000.

Cheneyville, La., M. H. Carnahan, mayor, is in the market for about \$16,000 worth of electric light plant equipment.

Rayne, La., will expend \$35,000 appropriated for electric light and waterworks plant machinery.

Shattuck, Okla., has voted \$85,000 for electric light and waterworks plant equipment.

The Farmers' Elevator & Supply Co., Appleton City, Mo., will equip a grain elevator, requiring about \$12,000 worth of machinery.

Indianapolis

INDIANAPOLIS, June 17.

The Access Cabinet Co., Marion, Ind., has been incorporated with \$50,000 capital stock to manufacture furniture. The directors are Paul and William P. Ritterskamp and Charles C. Becker.

The Richmond Safety Gate Co., Richmond, Ind., has increased its capital stock from \$40,000 to \$75,000.

The Deterling Mfg. Co., Tipton, Ind., has been incorporated with \$50,000 capital stock to manufacture talking machines. The directors are Phillip A. Deterling, George P. Bower and John F. Albershardt.

The plant of the Grip Nut Co., South Whitely, Ind., was destroyed by fire on June 5.

The Tokheim Oil Tank & Pump Co., Ft. Wayne, Ind., has been incorporated with \$200,000 capital stock to manufacture metal tanks and pumps. The directors are Ralph F. Dish-erens, William J. Fortune, M. B. Muxen, Frank J. Greer and Walter G. Burns.

The Laco Mfg. Co., Indianapolis, has been incorporated with \$150,000 capital stock to manufacture acetylene generators, accessories and appliances. The directors are Miles E. Loehr, John O. Motto and Walter K. Loehr.

The Peru Mfg. Co., Peru, Ind., manufacturer of metal products, is completing the equipment of its factory, which has 46,500 sq. ft. of floor space, and expects to have the plant in operation shortly.

Texas

AUSTIN, June 15.

Preparations are being made by the Texas & Pacific Railway to rebuild its shops at Marshall, recently destroyed by fire. The loss is estimated at \$500,000 and includes the main machine shops, airbrake and coppersmith departments, tool room and power plant.

The grain elevator and flour mill of the Marshall Mill & Elevator Co., Marshall, recently destroyed by fire, will be rebuilt at a cost of about \$75,000. The mill will have a daily capacity of 600 bbl.

The Crystal Ice & Fuel Co., Houston, which has increased its capital stock from \$15,000 to \$75,000, will enlarge its ice plant.

The Wichita Falls Motor Co., Wichita Falls, manufacturer of motor trucks, has increased its capital stock from \$400,000 to \$800,000. It will enlarge the capacity of its plant to meet outstanding orders for its product.

The Brazos River Hardwood Co., Freeport, which has been incorporated, with a capital stock of \$25,000, will construct a mill for the manufacture of hard wood lumber.

E. L. Green, Chandler, will construct an electric light and power plant.

California

LOS ANGELES, June 11.

The Long Beach Shipbuilding Co., Long Beach, Cal., will build a one-story machine shop, 90 x 150 ft., to cost \$15,000.

The Schofield Engineering Co., San Francisco, has concluded arrangements with the Emergency Fleet Corporation for the construction of a shipbuilding plant at San Diego, for concrete-steel oil tank vessels. It will consist of four shipways, with shop and erecting buildings. The initial contract provides for the building of 8 tankers, of about 7500 tons capacity, estimated to cost with machinery about \$700,000 each. E. M. Schofield will be in charge.

The Great Western Power Co., San Francisco, is negotiating with the Government for the construction near Oroville of a hydroelectric power plant to cost over \$3,000,000.

Fire in the forge shop of the carriage works of Michael Broedel, South First and Williams streets, San Jose, Cal., June 4, destroyed the wagon plant, with loss of about \$15,000.

The Motors Equipment & Tractor Co., Los Angeles, has been incorporated with a capital of \$100,000 by H. T. Hays, L. G. Dodge and J. W. Bate.

The Atchison, Topeka & Santa Fe Railway Co. coastlines, Los Angeles, is planning to increase the capacity of its shops at Bakersfield, Cal. W. M. Catlin is purchasing agent.

The Consolidated Sheet Metal Works, 137 Rose Street, Los Angeles, has filed notice of organization. Charles J. Strangman, Monterey Park, heads the company.

The Pacific Northwest

SEATTLE, WASH., June 11.

Repair plants, foundries and machine shops are rushed to capacity and many have orders ahead for several months.

The local labor situation is facing a serious problem. Officials in charge of the Seattle office of the United States Employment Service report that the demand for common labor in shipyards and other industries engaged in war work is fully 60 per cent greater than the supply.

The plant of the Kautz Mfg. Co., Portland, manufacturer of sash and doors, was recently destroyed by fire with a loss of \$15,000.

The Willamette Iron & Steel Works, Portland, recently constructed and turned over 15 3-furnace Scotch marine boilers in 30 days. The boilers weigh 60 tons each.

The Todd Drydocks, Inc., Seattle, has been incorporated with a capital stock of \$1,000,000. It is a subsidiary of the Todd Shipbuilding Corporation and will operate the former ship repair works of the Seattle Construction & Dry Dock Co. The plant will be rebuilt and the capacity increased.

The plant of the Harrison Shingle Mill Co., Harrison, Idaho, was recently destroyed by fire with a loss of \$20,000.

The Standard Cooperage Co., Aberdeen, Wash., has purchased the Wilcox Shingle Mill and will convert it into a cooperage factory. It will be completely overhauled and new machinery installed at an estimated cost of \$50,000.

Plans have been completed by R. J. Hubbard and T. R. Miller, Portland, for the establishment at Reedsport of a sawmill with a daily capacity of 125,000 to 150,000 ft. A box factory will also be constructed.

The Kiernan & Kern Shipbuilding Co., Portland, has received a Government contract for six 5000 ton wooden steamers. The plant will be enlarged and new ways added.

The Montana Packing & Cold Storage Co., Great Falls, Mont., recently incorporated for \$5,000,000, has taken over the packing plant of the Great Falls Meat Co., which it will remodel and improve to give it 10 times its present capacity.

The Erickson Engineering Co.'s plant in Seattle is practically completed and the keel of first vessel will be laid this month. By the end of the year, it is expected that 5000 men will be employed. The yard has five ways.

The Ederer Engineering Co., Seattle, has completed its new machine shop at 2945 First Avenue and is building cranes, hoists and conveying machinery for Northwest shipyards.

H. H. Gastman, South Bend, Wash., is at the head of a company which plans the construction of a shipyard in South Bend to cost \$60,000. A site has been selected.

The Star Iron Works, Tacoma, is proceeding rapidly with the enlargement of its plant to handle Government orders for ship fittings. The new structure will cost about \$10,000.

The Marsh & Allard Foundry, Tacoma, which was recently closed as the result of an explosion, has re-opened. The furnace has been entirely rebuilt and work on Government contracts resumed.

The B. C. Box Company, Vancouver, B. C., will erect a mill and box factory which will have a daily capacity of 20,000 ft. Electric power will be used.

The plant of the Lamb Machine Co., Hoquiam, Wash., was recently damaged to the extent of \$5000 by fire.

The Great Northern Concrete Shipbuilding Co., Portland, has been incorporated with a capital of \$100,000 by G. W. Gilbreth, Seattle; B. H. Moor and E. E. Lawrence, Portland. One set of ways is already in and five more will be built. Concrete barges, lighters, and tow boats up to 1500 tons capacity will be built.

The Pacquet Concrete Shipbuilding Co., Portland, has been incorporated with a capital of \$50,000 by Joseph Pacquet, Julius and George N. Black.

Guy Roberts, Toledo, Ore., will erect a saw mill with a daily capacity of 50,000 ft.

Canada

TORONTO, June 15.

Manufacturers of machine tools report business very brisk. The placing of new shell orders continues and several shops handling these contracts are in the market for new equipment. The United States Government is placing numerous shell orders in Canada, to take care of which many manufacturers are enlarging their capacities. Lyalls, Ltd., Montreal, has commenced the erection of a new plant for the manufacture of 155-mm. shells and orders for equipment have been placed. Carson Brothers, Montreal, will also begin the erection of a new plant for the manufacture of the same size shells. Owing to the abnormal requirements for machine tools, shipments from the United States are very indefinite and few dealers are able to give a reliable date for delivery. A feature of the present demand is the marked activity in second-hand machinery. Inquiry for electrical equipment has developed to a large extent, owing to the changes contemplated by many firms in changing over from steam to electric power for the conservation of fuel.

Crane, Ltd., recently incorporated with its main office in Montreal, will build a factory on St. Patrick Street, Cote St. Paul. The plant will be erected on the unit system, so that additions may be made later. The initial expenditure calls for an outlay of \$400,000. The company will manufacture a complete line of valves and fittings, also plumbing supplies. The officers are: R. T. Crane, Jr., president; J. B. Berryman, first vice-president; E. C. Townsend, second vice-president and secretary.

Truro, N. S., will erect a new electric light and power plant at a cost of \$40,000. Part of the old equipment will be used in the new building, but the greater part of it will be new.

The Otis-Fensom Elevator Co., Victoria Street, Hamilton, Ont., manufacturer of elevators, hoists, etc., contemplates the erection of an addition to cost about \$40,000.

W. P. McNeil, Stellarton, N. S., will build a munitions plant at an early date to cost about \$60,000.

The erection of an automobile plant in Toronto is contemplated by J. N. Willys, care of Willys Overland Corporation, Toronto.

The Department of Mines, Dominion Government, Ottawa, Ont., contemplates the erection of an ore testing plant at Vancouver, B. C., to cost \$100,000.

Gladstone, Man., contemplates the erection of an electric power plant to cost \$15,000. S. Schooley is clerk.

O. L. Henault, 214 Bishop Street, Montreal, is in the market for a 3-kw., 220-volt, 60 cycle, single phase, electric transformer, reducing to 110 volts.

The Sheet Metal Products Co., Gerrard and River Streets, Toronto, Ont., will build an addition to its engine house to cost \$6,500.

The Canadian Allis-Chalmers, Ltd., Montreal, will build an addition to its Rockfield works to cost \$25,000. It will be in charge of the company's bridge department.

The main plant of the Victoriaville Foundry, Victoriaville, Que., recently destroyed by fire with a loss of \$15,000, will be rebuilt and new machinery purchased.

The Canadian General Electric Co., Peterboro, Ont., is preparing plans for enlarging its plant at a cost of \$250,000.

Work will be started at once on the erection of a plant for the Hercules Rubber Co., Brampton, Ont. The output will be confined at first to the manufacture of automobile accessories and will have an initial capacity of 500 tires per day. It is expected that the plant will be enlarged later for the manufacture of other forms of rubber goods. Thomas Thauburn, H. W. Dawson and John McMurchy are directors.

Plans are being prepared for lumber and pulp mills for the Beaver Cove Lumber & Pulp Co., London Building, Van-

couver, B. C. The plant will be erected at Beaver Cove and will cost about \$250,000. W. H. White is general manager.

The Magnet Toy & Novelty Co., Port Hope, Ont., is making arrangements for the erection of a toy factory on Sherwood Street, Bobcaygeon, Ont., to cost \$25,000.

The Roelofson Machine Tool Co., Beverley Street, Galt, Ont., will build a brick addition to its machine shop to cost \$40,000. J. J. Evans, 30 Water Street, North, is the architect.

The Goderich Mfg. Co., Goderich, Ont., will build a planing mill to cost \$30,000 and will require equipment.

The Canadian Stoves, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by Francis P. Macklem, 30 Hawthorne Avenue; William Gilchrist, Joseph A. Thompson and others to manufacture stoves, furnaces, boilers, etc.

The Page Wire Fence Co. of Canada has been granted license to do business in Ontario, with a capital stock of \$40,000 and has appointed Merton Church, Walkerville, Ont., attorney. It is the intention to erect a plant at Three Rivers, Que., at a cost of \$150,000.

Bird & Son, Ltd., Hamilton, Ont., has been incorporated with a capital stock of \$750,000 by James S. Lovell, 119 Madison Avenue; William Bain, Robert Gowans and others of Toronto, to manufacture paper, machinery, etc.

The Halifax Shipyards, Ltd., Montreal, has been incorporated with a capital stock of \$6,000,000 by Clive Pringle, Norman G. Guthrie, William E. Moore and others, all of Ottawa, Ont. It is proposed to build a shipbuilding plant in Nova Scotia at a cost of \$1,000,000.

The Clyde Engineering Co., Ltd., Montreal, has been incorporated with a capital stock of \$100,000 by Francis T. Peacock, Herbert Kennedy, John Bryson and others to manufacture marine auxiliary machinery, fittings, tools, etc.

The Midland Iron & Steel Co., Ltd., Midland, Ont., has been incorporated with a capital stock of \$1,000,000 by David S. Pratt, Douglas L. White, John W. Benson and others to manufacture machinery, tools, etc.

The Carter, Wood Shipping Co., Ltd., Montreal, has been incorporated with a capital stock of \$40,000 by Warwick F. Chipman, Francis G. Bush, George R. Drennan and others to build boats.

The Canadian Northern Rolling Stock Co., Ltd., Toronto, has been incorporated with a capital stock of \$100,000, by David B. Hanna, 1 Toronto Street; Gerard Ruel, Archibald J. Reid and others to build locomotives, engines, etc.

The Driver-Harris Co., Harrison, N. J., will establish a Canadian plant at Windsor, Ont.

The Wood Turning Products Co., Toronto, will build a one-story, concrete block factory, 40 x 120 ft. at Fenelon Falls, Ont., to be completed and in operation by August.

The Canadian Pacific Railway, Toronto, will build an addition to its machine shop and engine house at the foot of John Street to cost \$35,000. A coaling and motor house on King Street will also be erected at a cost of \$8,000.

Government Purchases

WASHINGTON, June 17.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, under the following schedules: 1865—4 back-gear precision lathes for Washington; 4490½—1 arc welding outfit for Washington, opening June 25; 4678½—2 air compressing outfits for Chatham and Cape May, opening June 21; 4679½—one 3000-ton forging press for South Charleston, W. Va., opening June 21; 4685½—one boring machine for South Charleston, W. Va., opening June 21; 4687½—8 boilers and 8 hoisting engines, f.o.b. works, opening June 21; 4688½—5 machine tool grinders for Washington, opening June 21; 4692½—1 radial drill for South Charleston, W. Va., opening June 21; 4693½—3 lathes for Washington, opening June 21; 4694½—1 tool grinder for Washington, opening June 21; 4695½—1 planer for South Charleston, opening June 21; 4700½—1 boring machine for Charleston, opening June 24; 4701½—1 motor-driven broaching machine for Charleston, opening June 24; 4704½—three 15-hp. electric motors, for Brooklyn, opening June 24; 4707½—1 25-hp. alternating-current motor and one 30-in. radial drill for Brooklyn, opening June 24; 4715½—2 motor-driven milling machines for Washington, opening June 24; 4716½—1 lathe for South Charleston, W. Va., opening June 24; 4723½—1 motor-driven profile grinder for Newport, opening June 24; 4724½—10 tool grinders for Washington, opening June 24; 4727½—1 hacksaw for Brooklyn, opening June 24.